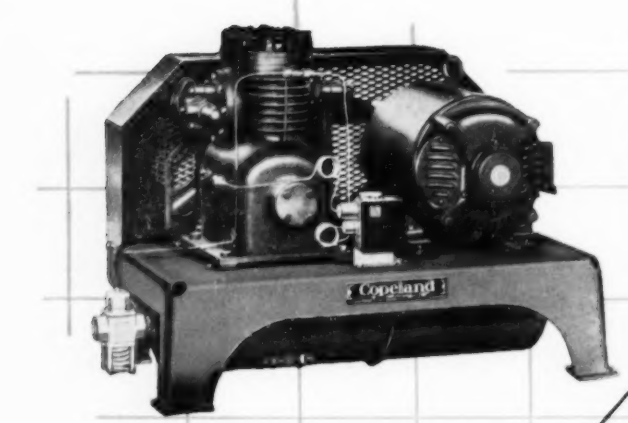
COMMERCIAL REFRIGERATION & AIR CONDITIONING

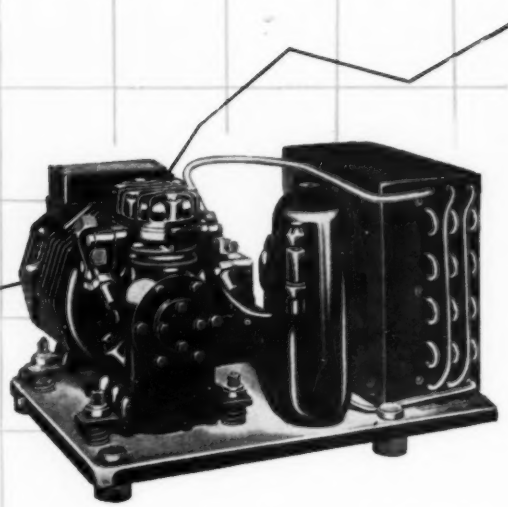
OCTOBER 1953

- Make Your Convention Expenses Tax Deductible
- Modern Architecture Needs Modern Refrigeration
- Selecting Equipment for Heat Pump Installations
- How To Start Your Business Off On the Right Foot

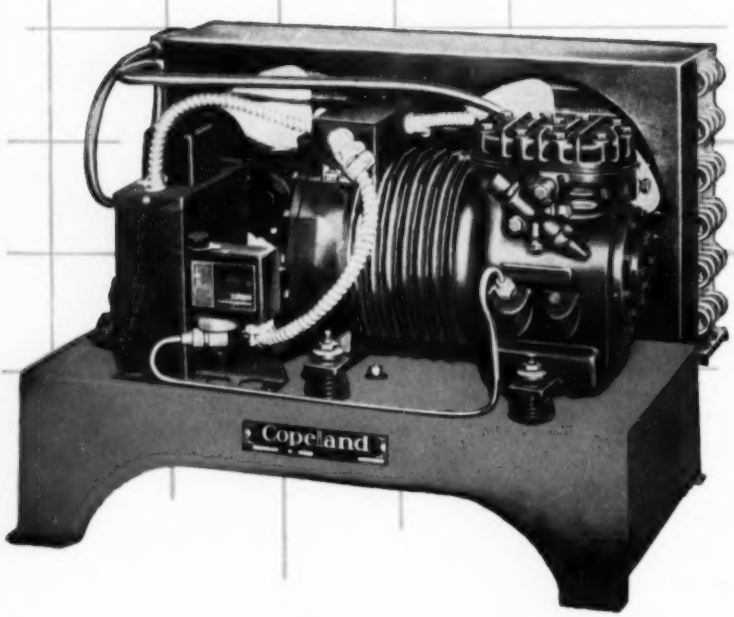
A "PICTURE INSTALLATION" of air conditioning equipment cools your favorite TV stars. *For the full story see page 68.*

MERCHANDISING, INSTALLATION AND MAINTENANCE OF AIR CONDITIONING AND COMMERCIAL REFRIGERATION





profit line



We're not crystal ball gazing when we tell you the Copeland complete refrigeration line can be your profit line for 1953. We've seen hundreds of dealers and jobbers succeed with Copeland, building their prosperity on three solid facts.

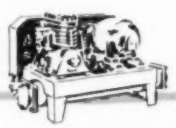
First, the Copeland line offers a unit for every size and type job. Air-cooled, belt-driven models range from ¼ through 3 HP, water-cooled from ⅓ through 7½ HP. Copelametic, the accessible hermetic, is available from ⅙ through 7½ HP.

Second, Copeland's long-standing reputation for recognized quality insures recommendations and repeat sales.

Third, extensive and hard-hitting national advertising pre-sells your prospects, creates a ready acceptance to cash in on.

Display and sell the complete Copeland line — your Profit Line for '53.

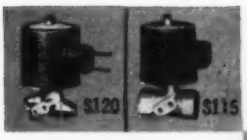
Copeland
DEPENDABLE *Electric* REFRIGERATION

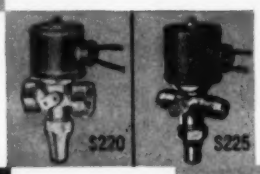


REFRIGERATION UNITS (OPEN - TYPE AND COPELAMETIC) WATER COOLERS

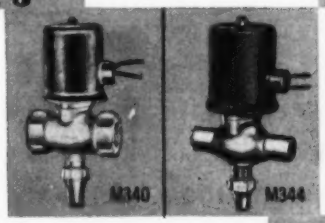
COPELAND REFRIGERATION CORPORATION · SIDNEY, OHIO

Circle No. 1 on Reader Service Card





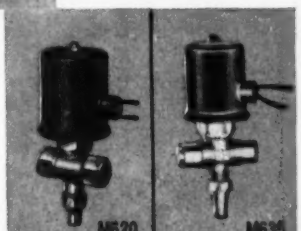
ALCO SOLENOID VALVES

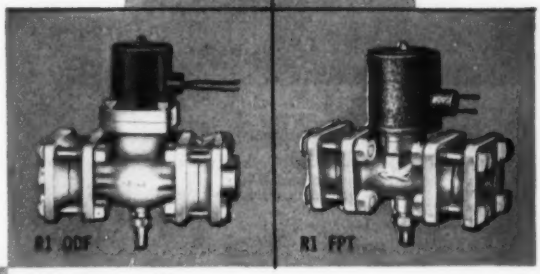


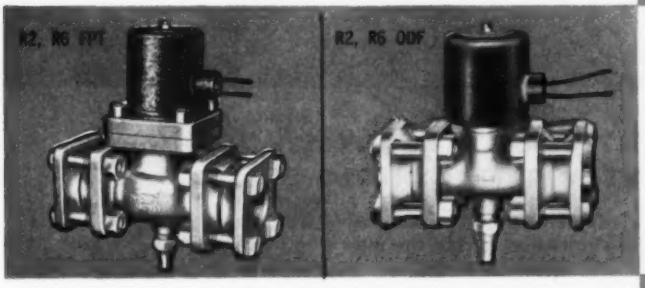
the complete line

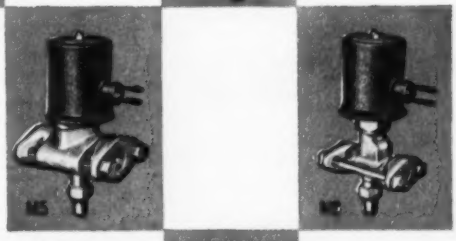
- for Freon-12, Freon-22, Methyl Chloride and Ammonia
- for liquid line, suction line or hot gas discharge service
- for brine, water, steam, air, oil
- for all types of electric current
- for wide range of connections: ½" to 2⅝" solder, ⅜" to 2" pipe thread
- for use with thermostats, float switches, timers, and many other control devices

Special valves for special applications are available.









Our Bulletins 173 and 182 give complete technical information. Send for your free copies today.

SEE YOUR ALCO WHOLESALER

ALCO VALVE CO.

843 KINGSLAND AVE. • ST. LOUIS 5, MO.

5686

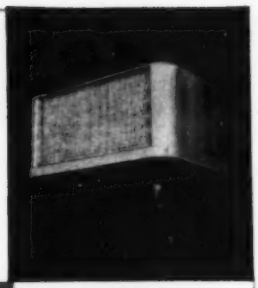
Circle No. 2 on Reader Service Card

No. 12 of a Series of 12 Advertisements

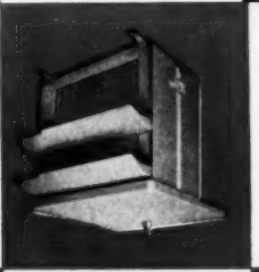
Good Men to Know!

R. H. CROWE
Factory Representative Oklahoma-Texas Territory
serving you through these reputable wholesalers

CARL WOLF
Lingo Co., Inc.
Houston, Texas

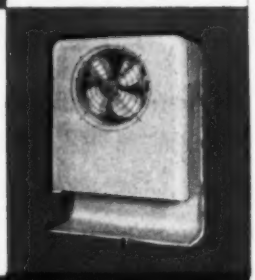


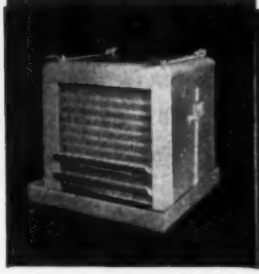
JOHN WAUGH
Waugh Bros. Supply Co.
Amarillo, Texas

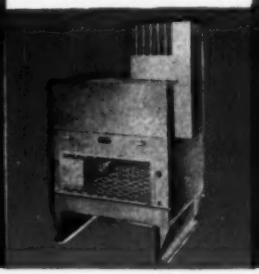


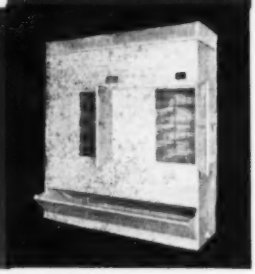
JIM MURPHY
Lingo Co., Inc.
Houston, Texas

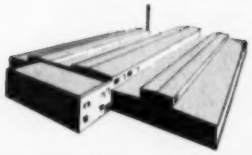
O. D. SPARKMAN
Refrigeration Supply Co., Inc.
Fort Worth, Texas











Plant 1—1600 Broadway N.E.
Minneapolis 13, Minn.

Plant 2—1729 Broadway N.E.
Minneapolis 13, Minn.

Plant 3—4th and Park Ave.
Faribault, Minn.

CONSULT YOUR McQUAY WHOLESALER FOR EVERY REFRIGERATION NEED

McQuay is proud of its complete line of *proved and preferred* refrigeration equipment and of the men who represent the company to you. There is a McQuay wholesaler in your territory, qualified by long experience and backed by the entire McQuay sales and engineering organization, who can give you the right answer to your specific problem — whether it's selling help, technical advice or quick action you want. Consult your McQuay wholesaler or write McQuay, Inc., 1643 Broadway N. E., Minneapolis 13, Minn.

McQuay INC.

REFRIGERATION
HEATING
AIR CONDITIONING

MANUFACTURERS OF HEAT TRANSFER EQUIPMENT SINCE 1923

Circle No. 3 on Reader Service Card

Established in 1944 as THE REFRIGERATION INDUSTRY, this magazine has no official affiliation with any group, society, or association.

THE STAFF

IRVING B. HEXTER
President and Publisher

LESTER P. AURBACH
Executive Vice President

EDWIN M. JOSEPH
Vice President
Circulation Director

ALLAN J. KICHLER
General Manager

THEODORE T. QUINN
Managing Editor

JIM McCALLUM
Editor

BENEDICT W. HOWES
Editorial Assistant

HAROLD F. BEHM
Franchise Manager

ALARIC MAUSSER
Art Director

Address all communications to
COMMERCIAL REFRIGERATION
AND AIR CONDITIONING
1240 Ontario Street
Cleveland 13, Ohio
Phone: Superior 1-9622
Teletype: CV-223

SALES OFFICES

NEW YORK
LEE HAAS, Mgr.
JOSEPH DEMATTHEW
60 E. 42 St.—Room 803
New York 17, N. Y.
Murray Hill 7-3420

CHICAGO
LLOYD WILLOUGHBY, Mgr.
T. R. WATKINS
520 N. Michigan Ave.—Suite 1613-15
Chicago 11, Ill.
Whitehall 3-1655

LOS ANGELES
ALAN T. CAZIER
3259 Wilshire Blvd.
Los Angeles 5, Calif.
Dunkirk 8-2201

LONDON
JOHN A. LANKESTER
5 New Bridge St., Fleet St.
London, E.C. 4, England

ABC

Published monthly by Refrigeration Publications, Inc., an affiliate of Industrial Publishing Co., which also publishes:

FLOW
APPLIED HYDRAULICS
INDUSTRY AND WELDING
OCCUPATIONAL HAZARDS
PRECISION METAL MOLDING

COMMERCIAL REFRIGERATION & AIR CONDITIONING

OCTOBER, 1953
VOLUME 10, NO. 10

IN THIS ISSUE

GETTING OFF TO A "WRITE" START 34

MODERN ARCHITECTURE NEEDS MODERN REFRIGERATION .. 36

HOW TO MAKE YOUR CONVENTION EXPENSES TAX DEDUCTIBLE 40

150 TONS OF LAUNDRY COOLING 41

AIR CONDITIONING SECTION

CBS-TV's "PICTURE INSTALLATION" 68

TESTING AND SERVICE METHODS FOR PACKAGE COMMERCIAL AIR CONDITIONERS 70
(Part 3—The Air Distribution System)

SELECTING EQUIPMENT FOR HEAT PUMP JOBS 74

DEPARTMENTS

About People 19

Applications Manual For Contractors 95

BTU's 33

Commercial Refrigerator Sales News 50

Contractor News 53

The Heating Side of Air Conditioning 74

Here's How 61

Letters 14

New Products 78, 86

Opportunities 63

Refrigeration Industry News 43

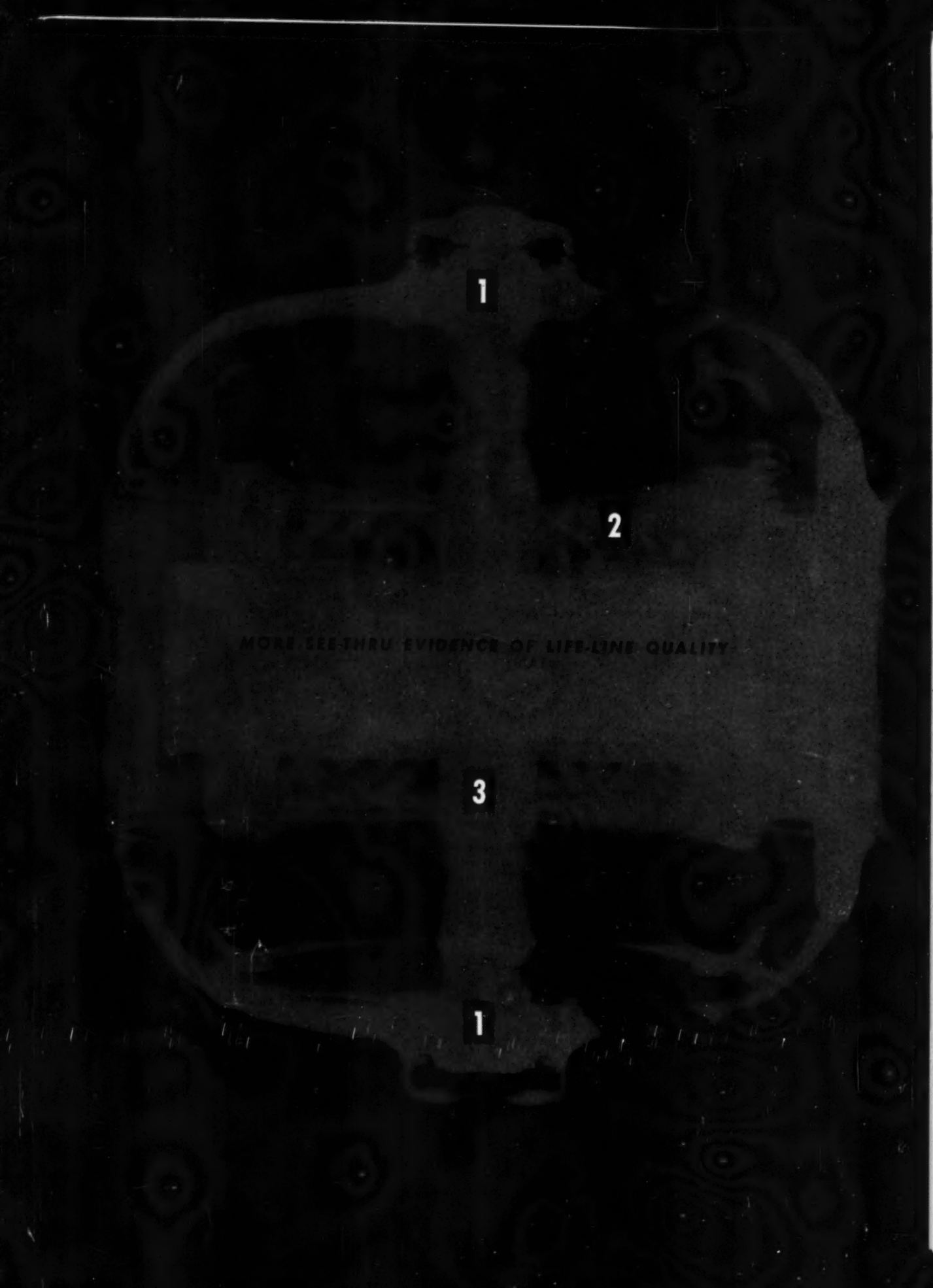
Useful Literature 77, 82

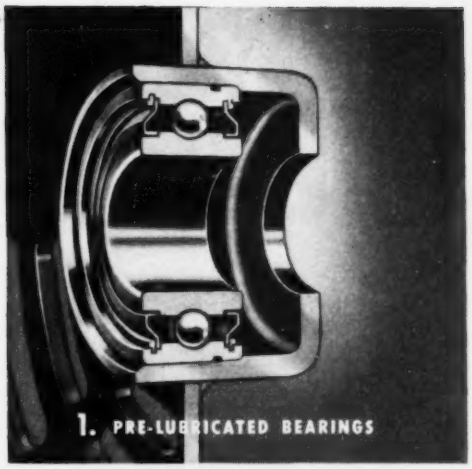
Index to Advertisers 98

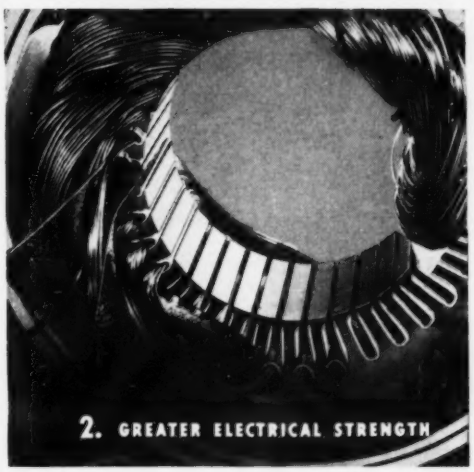
Subscription rates: United States and possessions — $3.00 per year, $5.00 for 2 years; Canada—$4.00 per year, $6.00 for 2 years; Single copy price, 30 cents. Foreign subscriptions $5.00 per year, except the United Kingdom. United Kingdom subscriptions £1.10 per year, payable in Sterling to our London Office. All subscriptions subject to individual acceptance by the publisher.

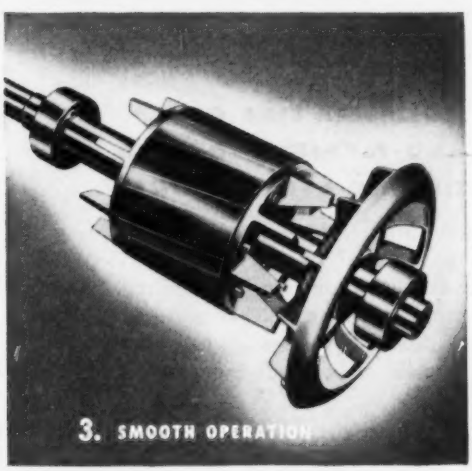
Not responsible for unsolicited editorial material.

Acceptance under Section 34.64 PL&R, authorized at St. Joseph, Michigan.
Copyright, 1953, by Refrigeration Publications, Inc.


1
2
MORE SEE-THRU EVIDENCE OF LIFE-LINE QUALITY
3
1







X-Ray camera bares construction of *Life-Line* motors

Here's more see-through evidence of why your best motor buy is Life-Line*. Pictured at the left is an actual X ray of a Life-Line 1-hp, 3-phase, squirrel-cage induction motor. The three inset illustrations show additional details of the most important Life-Line features.

Glance at the top inset and you can tell that this is the Life-Line *pre-lubricated* bearing . . . packed with grease and *sealed* at the factory. It needs no further lubrication and is protected for life against dirt and moisture. Also, you can observe how the seals keep grease from escaping regardless of mounting position.

Now, move your eye down just a little. You're getting an inside view of the Life-Line winding design that increases motor life. See why? Round-bottom stator slots leave no voids to collect dirt and dust—no dead air spaces to restrict conduction of heat. Tufvar® enameled wire coils improve insulation. Coil groups are wound in series to reduce the number of joints.

You can't see from looking at this rotor that it has been dynamically balanced to give you maximum freedom from vibration and noise. However, you can see that rotor bars and end rings are pressure cast from aluminum alloy. Also, note the skewed rotor slots that give smoother, quieter operation.

Of course, you haven't really seen anything yet. You haven't seen the figures that show how much Life-Lines can cut your costs, or how much they increase production. Call your Westinghouse representative or write to Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Penna., and ask for *Motor Cost Analysis*, booklet B-6052.

*Trade Mark

J-21778

YOU CAN BE **SURE**... IF IT'S

Westinghouse

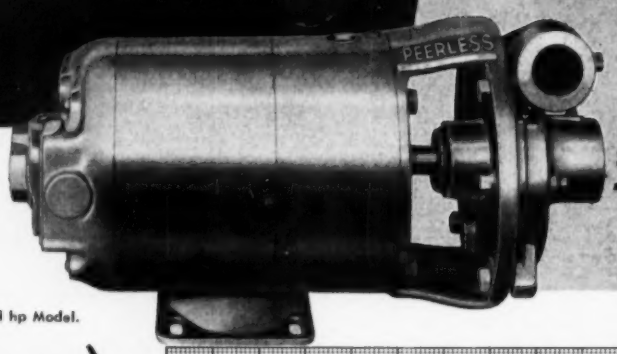
GET ECONOMY, DURABILITY
COMPACTNESS AND

PEAK PERFORMANCE

FOR YOUR AIR-CONDITIONING
APPLICATIONS

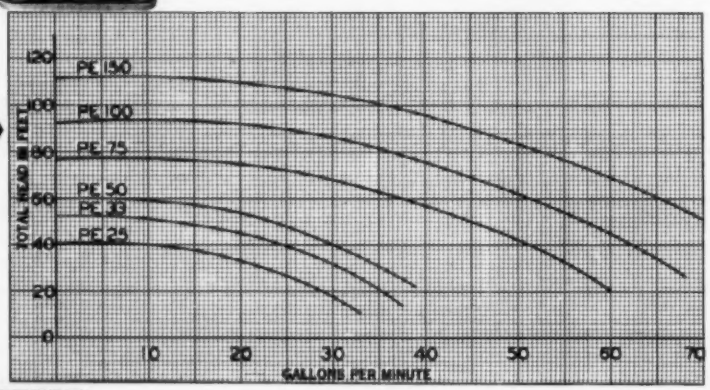
PEERLESS PUMPS

...WITH FRACTIONAL H. P.
PEERLESS
Fluidyne
TYPE PE PUMPS



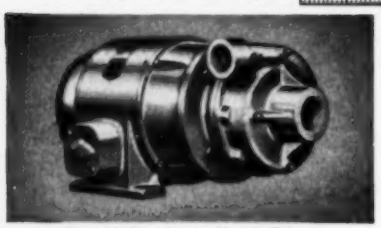
Type PE. Fractional hp Model.

PERFORMANCE CHART SHOWING HEAD-CAPACITY CHARACTERISTICS OF PEERLESS TYPE PE FRACTIONAL H.P. GENERAL PURPOSE PUMPS

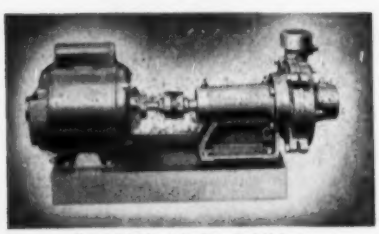


KEY TO PUMP H.P. IN CHART AT RIGHT

PE 25 — ¼ hp PE 75 — ¾ hp
PE 33 — ½ hp PE 100 — 1 hp
PE 50 — ½ hp PE 150 — 1½ hp



Type PE Face Mount Electric Drive.
Integral hp Model.



Type PB Flexible Coupled Drive.
Fractional hp Model.

THIS IS ONE OF A COMPLETE LINE OF PEERLESS FACE MOUNT AND FLEXIBLE-COUPLED PUMPS FOR AIR-CONDITIONING APPLICATIONS

Write for your copy of Peerless Bulletin B-2300. It completely describes and details the design, operating and performance characteristics of the successful line of Peerless Fluidyne Type PE and Type PB pumps. They have a capacity range up to 5500 gpm and a head range up to 260 feet. Larger sizes are available up to 40 hp. Availability is excellent from large stocks at both our Indianapolis and Los Angeles plants.

PEERLESS PUMP DIVISION

FOOD MACHINERY AND CHEMICAL CORPORATION

Factories: Los Angeles, Calif. and Indianapolis, Indiana.
Offices: New York; Atlanta; Chicago; St. Louis; Indianapolis; Phoenix; Fresno; Los Angeles; Tulsa; Dallas; Plainview; and Lubbock, Texas; Albuquerque, New Mexico.
Distributors in Principal Cities; Consult your Telephone Directory.

PEERLESS PUMPS fmc

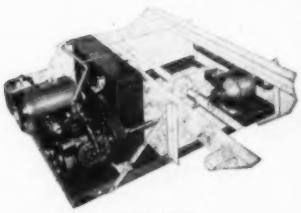
Circle No. 5 on Reader Service Card

Whether you have a truck or a trailer to refrigerate, whether you want a semi-automatic or fully automatic operation, Kold-Hold can give you a better answer to your refrigeration problems. The addition of Kold-Trux "Mobilmatic" Highside Units to the proven line of Kold-Hold Lowsides provides several ways to refrigerate transportation equipment efficiently and economically. Kold-Trux Units can be used with "Hold-Over," Thin "Hold-Over" or Quick Action Plates to supply completely automatic and thermostatically controlled refrigeration requiring no attention from the driver. It is driven from a live axle, propeller shaft, or power take-off and engages and disengages without shock to the engine or transmission. A specially designed "Hydro-Pack" Blower is available for use with this system in high temperature application.

For semi-automatic operation, the newly redesigned "Hold-Over" Plates can be used with a mounted compressor or make-and-break connections to maintain predetermined truck temperatures for day-long trips.

Whatever your truck refrigeration needs, you can be sure of the right answer from Kold-Hold.

Which of these methods is best for you?



KOLD-TRUX

Which do you prefer . . . Mobile or Hold-Over truck refrigeration? Kold-Hold can give you either or a combination of both.

When your weather worries start, pick out the routes with the biggest refrigeration problems and call on Kold-Hold to give you a satisfactory solution. They will give you the right combination for your needs from such highsides as the Kold-Trux Mobile Unit, a mounted compressor, or make-and-break assemblies, coupled to such lowsides as Kold-Hold Hold-Over Plates, Thin Plates, Serpentine Quick-Action Plates, or Blowers.

Why not give us the details of your problems and let our engineers find the most efficient solution for you. Write today for details.

HOLD-OVER PLATES

Tell us your truck refrigeration problems and send now for complete data and literature.

KOLD-HOLD

protects every step of the way

Circle No. 6 on Reader Service Card

ANSUL T-*FLO* DRIER

WITH **ANDRITE**

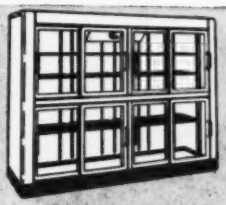
. . . picks up moisture faster and holds more moisture than any other refrigerant drier! Easy to install . . . easier to replace! Lower inventories — four drier sizes and seven fittings provide 28 combinations of installation.

MANUFACTURERS OF REFRIGERANTS, REFRIGERATION PRODUCTS, INDUSTRIAL AND FINE ORGANIC CHEMICALS, LIQUEFIED GASES, DRY CHEMICAL FIRE EXTINGUISHING EQUIPMENT

ANSUL *Chemical Company*

REFRIGERATION DIVISION • MARINETTE, WISCONSIN

Circle No. 7 on Reader Service Card



DAIRY & BEVERAGE WALL CASE

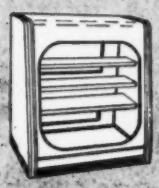
"MAKING SALES" IS NOT ENOUGH . . .

KEEP YOUR PROFITS **UP**

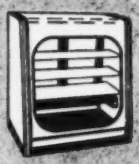
WITH

COLDIN REFRIGERATORS

FEATURE THE LINE THAT GIVES YOU A SATISFACTORY MARGIN . . . PLUS FEATURES THAT MAKE CUSTOMERS BUY!

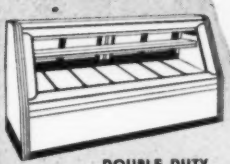


LOW TEMPERATURE FULL VISION DISPLAY

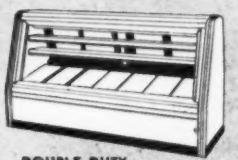


SPOTLIGHTER FULL VISION DISPLAY

FRONT SERVICE DISPLAY CASE

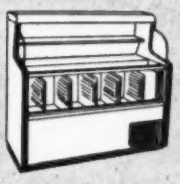


DOUBLE DUTY BUTCHER CASE

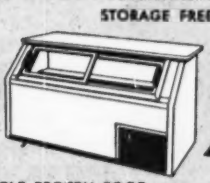


DOUBLE DUTY DELICATESSEN CASE

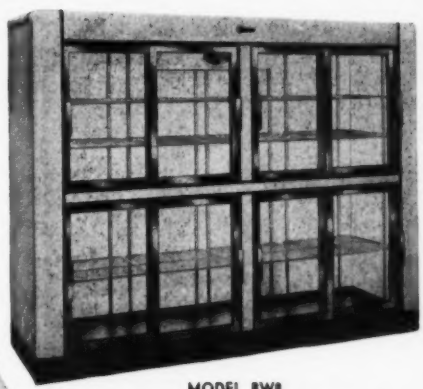
FORMICA TOP COUNTER & DISPLAY CASE



FROZEN FOOD MERCHANDISERS



ANGLE FROZEN FOOD MERCHANDISER



MODEL BW8
AVAILABLE IN 6, 8 & 10 FT. LENGTHS

ALL PURPOSE DAIRY & BEVERAGE WALL CASES

STRAIGHT FRONT AND SLANTED

An all-around display and storage wall case that's used many different ways. All welded steel construction, with gleaming white, acid resistant porcelain enamel. Smooth sliding doors have glass that cannot fog or film, in stainless steel frames with oversized KWIK-GRIP handles. Five display levels and strategically located fluorescent lighting.

COMMERCIAL STORAGE FREEZER

These days your operating costs are higher — so you need the higher profit. Coldin offers the bigger pay-off on every sale. Important, too, you need the selling advantages Coldin gives you . . . the Coldin reputation for quality . . . the more-for-the money features that clinch sales on your floor.

Coldin NEW YORK

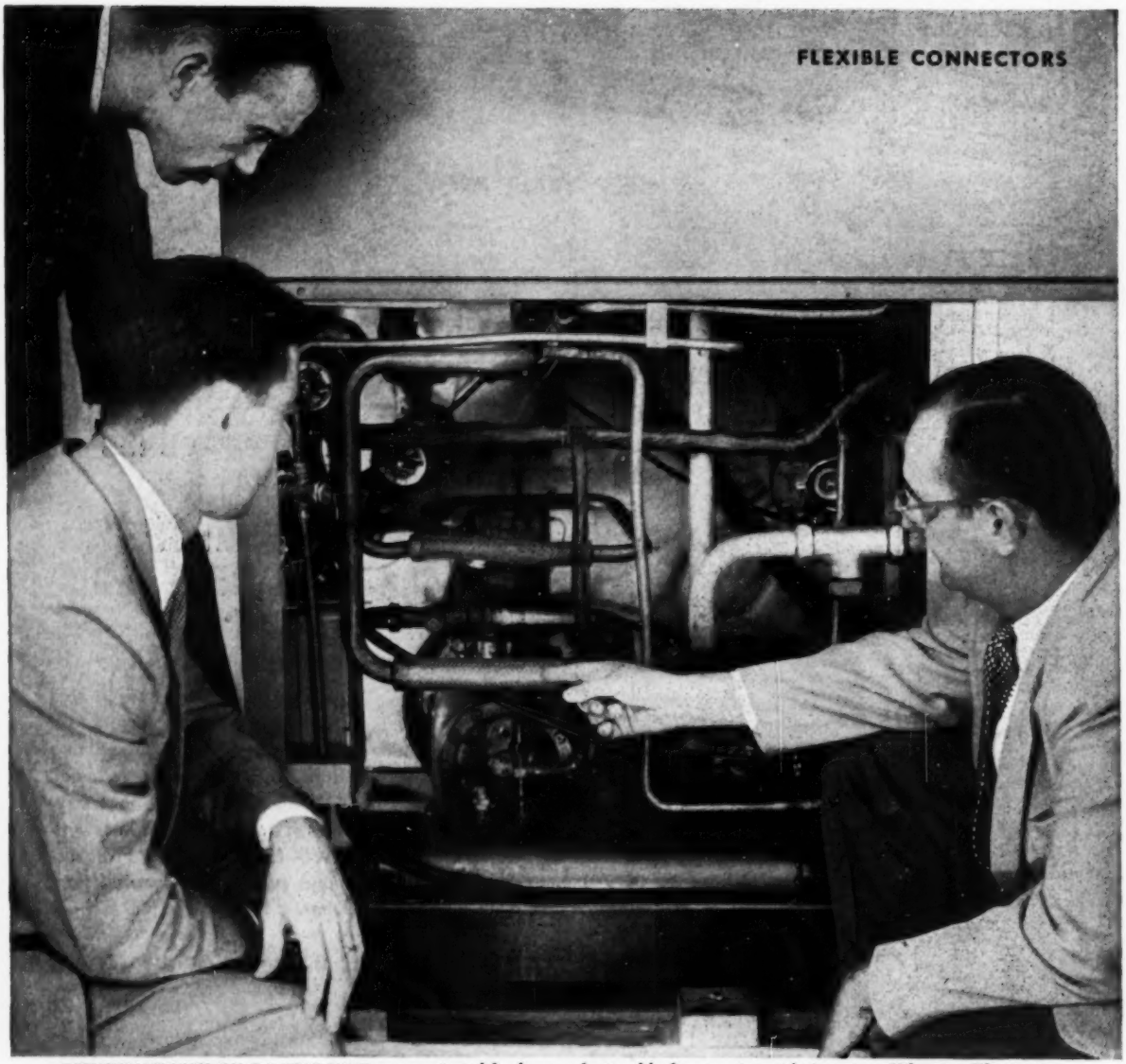
YOUR KEY TO BETTER REFRIGERATION

DEALERS — WRITE FOR CATALOG AND INFORMATION

COLDIN CABINET CO. INC.

2800 Webster Ave., N. Y. 58, N. Y. • CYpress 5-3311

Circle No. 8 on Reader Service Card



REFRIGERANT LINES ON G-E HEAT PUMP are equipped for long, safe, trouble-free service with American Vibration Eliminators.

G-E Heat Pump works in a whisper with American Vibration Eliminators

It heats—it cools . . . *without burning fuel!* General Electric's new heat pump uses only air and electricity. To cool, it pumps heat to the outdoors. To heat, it takes warmth from "cold" outdoor air. And it works in a whisper . . . none of the usual vibration and noise you expect from a man-size compressor.

American Seamless Flexible Metal Connectors—called Vibration Eliminators—absorb and dampen this noise and vibration in the piping . . . as well as provide for expansion. They guard refrigerant lines against fatigue-cracking. Seamless and pressure-tight, these connectors convey costly Freon safely. They come in standard copper tube sizes, and can be easily and permanently installed.

G-E Engineers report complete satisfaction with these connectors—as do many others in the air-conditioning and refrigeration field, from design engineers to servicemen. For more specific information on how American Vibration Eliminators can be adapted to your requirements, write for Bulletin VE-310R to: *The American Brass Company, American Metal Hose Branch, Waterbury 20, Conn. In Canada: The Canadian Fairbanks-Morse Co., Ltd.*

53243

WHEREVER CONNECTORS MUST MOVE

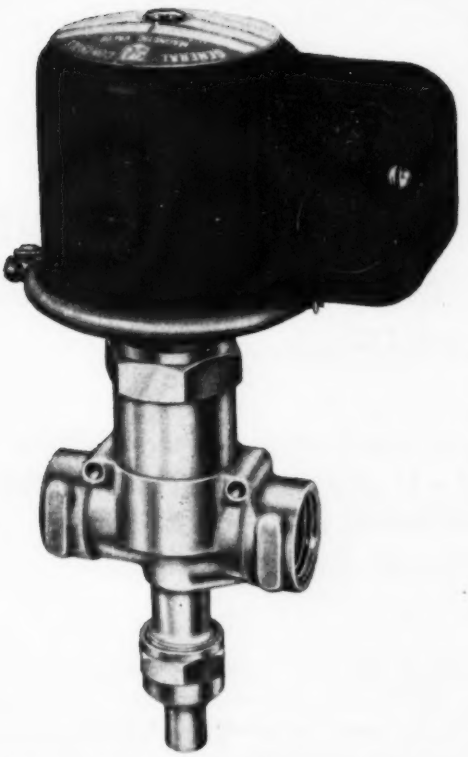
AMERICAN

flexible metal hose and tubing

an ANACONDA® product

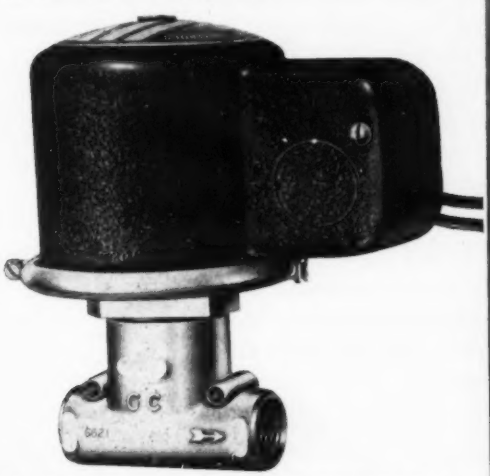
Circle No. 9 on Reader Service Card

UNSURPASSED FLOW CONTROL



General Controls' piloted, piston-operated valves such as the K-15 above, are available with sweat, pipe, or flange connections in all line sizes, handling freon, methyl chloride, and sulphur dioxide. Special valve bodies available for ammonia.

General Controls' magnetic-piloted piston valves offer distinct advantages for refrigeration equipment. Capable of handling high refrigerant capacities with minimum pressure drop, the piston valve is held open electrically, assuring minimum flashing on liquid refrigerants. Available with metal or composition valve discs, these quick-opening, quick-closing valves handle all types of refrigerants over a wide range of temperatures. Suitable for liquid or suction-stop systems, General Controls' magnetically-piloted piston valves are *unsurpassed* for automatic flow-control in the refrigeration field.



K-25 Series of electro-magnetic stop valves are super quiet when energized, with sweat, flare-tube or pipe connections, available in line sizes. These versatile 2-wire valves handle air and water as well as the full range of commercial refrigerants.

General Controls

K-15

K-25

Magnetic Valves

GENERAL CONTROLS

Glendale, California • Skokie, Illinois

Manufacturers of Automatic Pressure, Temperature, Level and Flow Controls for Heating, Home Appliances, Refrigeration, Industrial and Aircraft Applications.

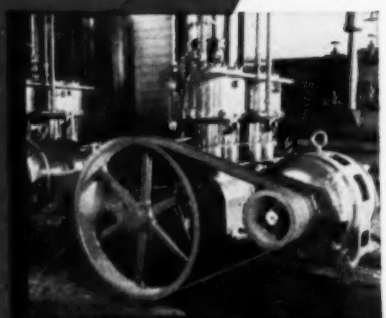
FACTORY BRANCHES IN 36 PRINCIPAL CITIES

See your classified telephone directory.

Circle No. 10 on Reader Service Card

Century splash proof motor's driving fans out in the open, without any protection.

WHY Century MOTORIZED EQUIPMENT KEEPS YOUR CUSTOMERS *SATISFIED...*



Two 100 horsepower Century motors driving refrigeration compressors.

The motor specifications—where skillfully selected—to assure the TOP PERFORMANCE and DEPENDABLE QUIET SERVICE that is built into each class of equipment.

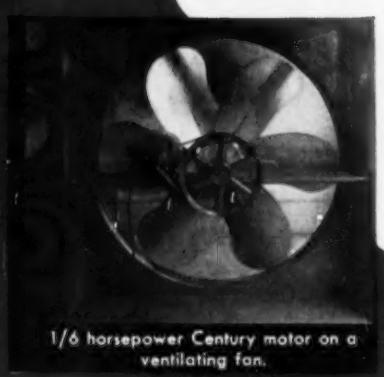
Refrigeration compressors require one combination of operating characteristics and specifications—fans and blowers another combination—various types of heating equipment still another.

In over 50 years, Century has developed a wide line of types of motors with literally hundreds of specifications to choose from. It is easy to ENGINEER YOUR PRODUCT PERFORMANCE—THROUGH SKILLFUL MOTOR APPLICATION.

If you have motor service problems, phone or write to any of Century's 28 District offices regarding Century's national network of service stations—the motor exchange plan will serve you whether your motors are in or out of warranty.

Specify Century Motorized Equipment—get top equipment performance—dependable quiet service—keep your customers satisfied.

Century 125 Horsepower motors on circulating pumps for chilled water. Used in department store.



1/6 horsepower Century motor on a ventilating fan.

CENTURY ELECTRIC COMPANY
1806 Pine Street • St. Louis 3, Missouri

Offices and Stock Points in Principal Cities

Century C MOTORS

Look at the space saved!

Outline shows size of old style fitting compared with the new Close-Ruff Elbow.

– and it's got <u>everything</u> I've wanted in an elbow!

★ ***SHORT RADIUS*** — made to fit tight spots.

★ ***STRONG AND RUGGED*** — with compact design.

★ ***PURE COPPER*** — matches with copper tube.

★ ***FASTER INSTALLATION*** — heats up quickly.

★ ***ECONOMY WEIGHT*** — saves copper and space.

NORTHERN INDIANA BRASS CO.
1014 PLUM STREET, ELKHART, INDIANA

TRY IT YOURSELF, FREE! We'll be glad to mail you, without cost, a new Nibco Close-Ruff Elbow so you can check for yourself how it speeds the job and protects your profit. Send coupon for free sample.

NORTHERN INDIANA BRASS COMPANY
1014 Plum Street, Elkhart, Indiana

I'd like to test the New NIBCO Close-Ruff Elbow. Rush my free sample.

Name_____

Address_____

City_____ State_____

Circle No. 12 on Reader Service Card

always
replace with
genuine **Wagner**
Motor Starting Capacitors

Don't take capacitors for granted—when new motor starting capacitors are needed use genuine Wagner Capacitors. Then you *know* that you'll get top performance.

There's no guesswork in replacements when you use Wagner Capacitors. The capacitor number, stamped on the motor nameplate, tells you the right capacitor to use. You're sure of the size, the mounting brackets, the terminals, and the quality.

Do you have Wagner's Fast-Moving Parts Bulletin—MU-122 and Motor Repair Parts Catalog—MU-40? Be sure to get your copies . . . they're a big help for the motor repair shop.

M553-5

Wagner Electric Corporation EST 1891

WAGNER ELECTRIC CORPORATION
6442 Plymouth Ave., St. Louis 14, Mo., U. S. A.
MOTORS · BEARINGS · STANDARD ROTORS
BRUSHES · CAPACITORS · COMMUTATORS
OVER 750 AUTHORIZED SERVICE STATIONS
OR PARTS DISTRIBUTORS

Circle No. 15 on Reader Service Card

LETTERS

Seeks Further Knowledge

EDITOR:

We are interested in furthering our knowledge on refrigeration and air conditioning, and would like to enroll one of our men in an accredited refrigeration and air conditioning school.

It is requested that you furnish us with various schools which are located in this section of the country.

L. H. DOERRMAN
Reading, Pa.

Names of refrigeration and air conditioning schools located in this general area are listed below:

Mahonoy City Technical School Institute, Mahonoy, Pa.; Williamsport School, Williamsport, Pa.; Aero Refrigeration School, Philadelphia, Pa.; Philadelphia Technical Institute, Philadelphia, Pa.; Pennsylvania Institute, Philadelphia, Pa.; Quaker Technical School, Philadelphia, Pa.; Temple Technical School, Philadelphia, Pa.; Engineering Institute, Philadelphia, Pa.

If you are interested in correspondence courses, schools providing this include: Commercial Trades Institute, Chicago, Ill., and Utilities Engineering Institute, Chicago, Ill.

Method of Calculating Loads Is Explained

EDITOR:

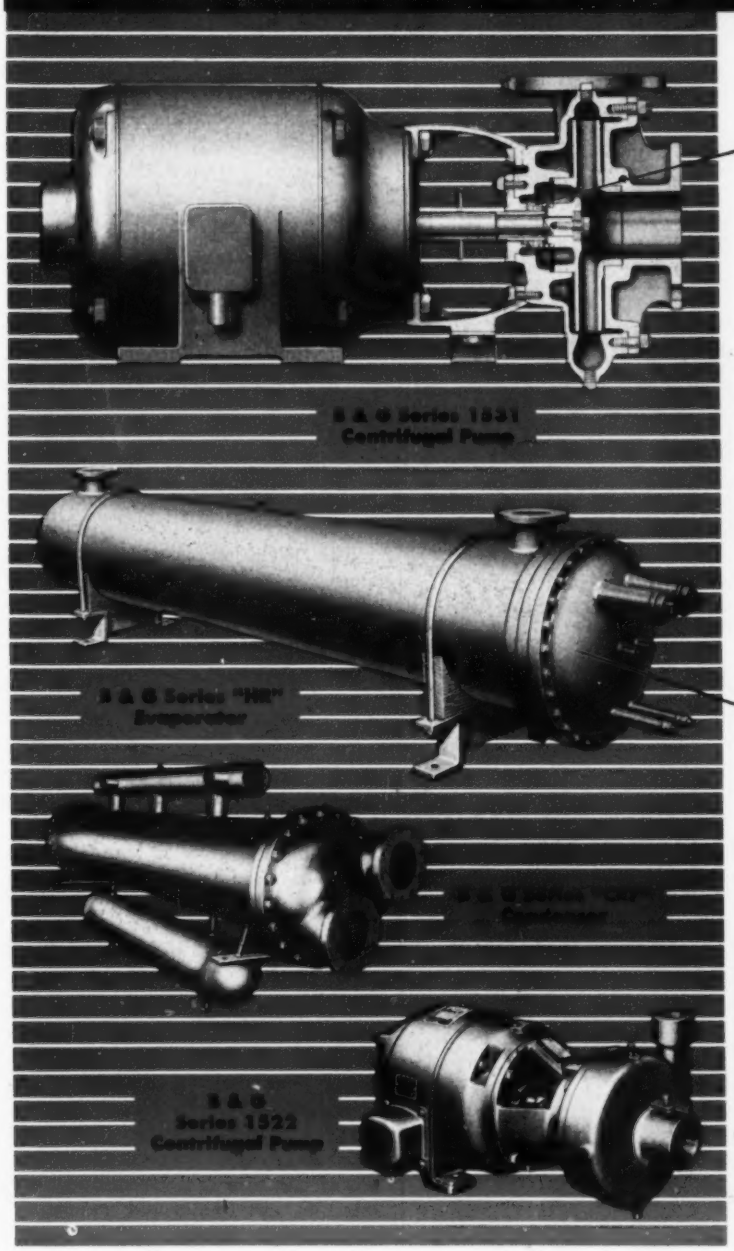
In the August issue of COMMERCIAL REFRIGERATION AND AIR CONDITIONING Mr. Hugo C. Smith presents a problem concerning load calculations on page 96. Between paragraphs three (3) and four (4) there is a problem covering the dimensions of a cooler 20' x 20' x 10'. Will you please have the problem checked. There might be a typographical error somewhere. As a reader of this book, please let me know so as I can continue with the problem.

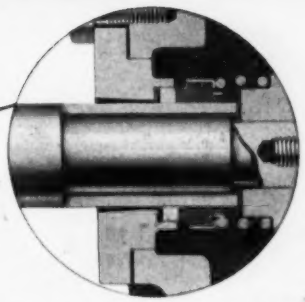
VINCENT S. PECK
Mt. Rainier, Md.

The calculations to which referred to on page 96 of our August issue are correct. Here's how they were obtained:

The dimensions of the cooler, as shown in the example are: 20 feet long, 20 feet wide, and 10 feet high. To obtain the outside dimensions, it

Plus Value REFRIGERATION AND AIR CONDITIONING EQUIPMENT



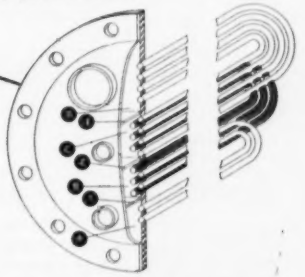


B & G 1531 UNI-BUILT PUMP WITH NEW *REMITE* SEAL

Here's a revolutionary new development in pump design...a *plus value* which eliminates leakage—assures long, trouble-free life.

A carbon seal ring faces on a "REMITE" floating seat—a new type of material, *so hard it will scratch glass*—wear-proof and corrosion-resistant. This feature alone makes the 1531 the "buy" for refrigeration and air conditioning installations.

Measure the B & G Series 1531 Pump by any standards you choose...you'll agree that never before have you seen so many warranties of top performance.



B & G SERIES "HR" EVAPORATOR

You'll find *plus value* in the unique design of this evaporator which prevents oil-trapping in the head passes. The diagram above shows how the lower tubes in each pass are located very close to the baffle plate, permitting any oil entering the passes to travel freely with the Freon vapor back to the compressor.

Other features include movable steel legs, for easy mounting under various conditions. The shell connections extend well beyond the insulation cover—assure easy installation.

Send for complete file of Catalogs

B & G Catalogs on Centrifugal Pumps, Evaporators, Condensers and Heat Exchangers give full information on the latest in air conditioning and refrigeration equipment.

BELL & GOSSETT
C O M P A N Y

Dept. DD-45 Morton Grove, Illinois

Canadian Licensee: S. A. Armstrong, Ltd., 1400 O'Connor Drive, Toronto

Circle No. 14 on Reader Service Card

Carries your shop to the job...

the NEW

Service-Master

REFRIGERATION AND AIR CONDITIONING SERVICE BODY

Service-Master is designed to speed up your work — styled to reflect the ability of your firm. Its six weathertight compartments include shelves and bins for the tools and parts you'll need on the job.

Whether your chassis is old or new — you'll find it economical to choose *Service-Master* for your next service body.

1. Weathertight, double-panel doors.
2. 48½" wide loading area, with one-piece ribbed steel floor.
3. Fully enclosed wheelhousings.
4. Parts bin with hinged cover and removable dividers.

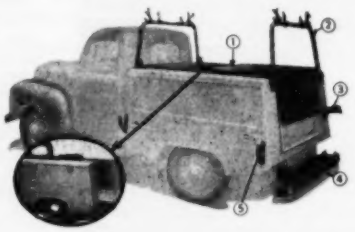
SERVICE-MASTER is Delivered *Ready-for-Work!*

Service-Master sets the pace in service body styling. Compare it with any other make for completeness, design, and advertising value.

◄LOOK FOR THIS NAMEPLATE!

OPTIONAL EQUIPMENT

1. Telescopic steel roof, and endgate with locking handle.
2. Removable rack with adjustable ladder and material brackets.
3. Removable vise bracket with pipe support on head panel.
4. Rear bumper-step.
5. Pipe carrying brackets.



Available in all 48 states

McCABE-POWERS AUTO BODY CO.

5900 NORTH BROADWAY • ST. LOUIS 15, MISSOURI

Please send me literature and complete information on Service-Master:

Name_____

Company_____

Address_____

City_____ Zone_____ State_____

AZ

Circle No. 45 on Reader Service Card

is necessary to multiply each dimension by the other, and then multiply that total by 2. For instance, 20 length times 20 width equals 400; 20 length times 10 height equals 200; 20 width times 10 height equals 200. Adding up these three figures gives a total of 800. This represents the area in square feet of three surfaces. To get combined area of all six surfaces, it is necessary to multiply 800 by 2, which will give the total of 1600 sq. ft. shown in the article.

Coldspot Service Articles Now Out of Print

EDITOR:

Sometime back you published a series of articles on the care and maintenance of Coldspot refrigerators. If it is possible I should like to get these articles. Your cooperation in this will be greatly appreciated.

ARTHUR C. PECK
Pendleton, Ore.

The articles on Coldspot refrigerators, referred to in this letter, were published several years ago, and our supply of copies of these issues has long since been exhausted.

REVISED EDITION OF TRANE MANUAL OUT

A completely revised edition of the Trane Refrigeration Manual has been published by The Trane Co., La Crosse, Wis.

The new edition contains two entirely new chapters on refrigeration piping. Other changes include a new chapter on refrigeration system control, a revised chapter on service operation and a revised refrigeration system service analysis chart.

The manual begins with a discussion of refrigerants and the refrigeration cycle. Succeeding chapters give information concerning the selection, installation and servicing of all the component parts of refrigeration systems, including evaporators, compressors, condensers, thermostatic expansion valves, refrigeration system control equipment, motors and motor control equipment, heat exchangers, dryers, valves, piping and accessories.

The 125-page manual can be purchased from The Trane Co., La Crosse, Wis., for $1.50.

Peerless

PREMIUM-BUILT
ELECTRIC MOTORS

KNOWLEDGE

SKILL

SERVICE

RESPONSIBILITY

A.D. THE PEERLESS ELECTRIC COMPANY 1893

A CAPACITOR-START, CAPACITOR-RUN MOTOR DESIGNED SPECIFICALLY FOR REFRIGERATION COMPRESSOR DUTY.

POWER

Peerless Motors have a special power . . . a power that builds reputations.

The men who build, sell and service America's finest mechanical equipment know what we mean. They know the value of a motor expertly designed for its job . . . a motor that looks and acts like an integral part of the machine it drives. These men know, too, the importance of service. They respect the efficient, friendly way Peerless Engineers handle difficult problems of application and supply.

Yes, Peerless Motors carry a special premium . . . a name . . . a name that for 60 years has stood as a symbol of quality and performance.

MOTORS FANS BLOWERS

THE PEERLESS ELECTRIC COMPANY

Peerless Electric

REVERE

DRYSEAL

REFRIGERATION TUBE

HAS A "FLARE" FOR NOT SPLITTING!

It's not just a flare, it's practically a certainty that you can flare Dryseal for compression fittings without splitting. The secret is its special temper and its ductility.

And because it is dead-soft Dryseal can be bent with the hands with little effort. Along with its workability is the assurance that when you take Dryseal from the carton it will be as bone-dry and dirt-free as Revere's most modern manufacturing methods can make it. The last step in the manufacture of Dryseal is the double crimping of both ends of the tube, so that Dryseal is sure to come to you free from dirt and moisture. And the double crimp is made in such a way as not to change the diameter of the tube so that it can pass through any opening large enough for the tube itself.

And, for your greater convenience, Dryseal is packed in a nifty-50, one-coil carton. This carton has been attractively designed for easy identification in stock and contains one 50-foot coil of Dryseal Refrigeration Tube, making it easier to handle, light weight and economical. Carton is sturdily made to assure protection of the tube.

IN THE EASY-TO-HANDLE

NIFTY-FIFTY...ONE COIL CARTON

REVERE

COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801

230 Park Avenue, New York 17, N. Y.

• • •

Mills: Baltimore, Md.; Chicago and Clinton, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Rome, N. Y.— Sales Offices in Principal Cities. Distributors Everywhere

SEE REVERE'S "MEET THE PRESS" ON NBC TELEVISION EVERY SUNDAY

Circle No. 17 on Reader Service Card

about PEOPLE

Appointment of **E. A. Mishler** as assistant Airtemp sales manager of the Export Div. of Chrysler Corp. was announced by C. B. Thomas, president. Mishler joined Chrysler Airtemp Sales Corp. in 1941 in marketing research, dealer development and training work. He transferred to the Export Div. of Chrysler Corp. in 1947.

•

Henry Valve Co. has realigned territories involving factory salesmen **Berthold Rossnagel** and **J. R. McCahill.** Rossnagel will now represent the firm in Kentucky, Michigan, Ohio, West Virginia, western Pennsylvania, and Indiana, except Lake County, and Ontario, Canada. McCahill will travel in Illinois, eastern Iowa, eastern Missouri, Minnesota, Wisconsin, and Manitoba, Canada.

B. Rossnagel

J. R. McCahill

•

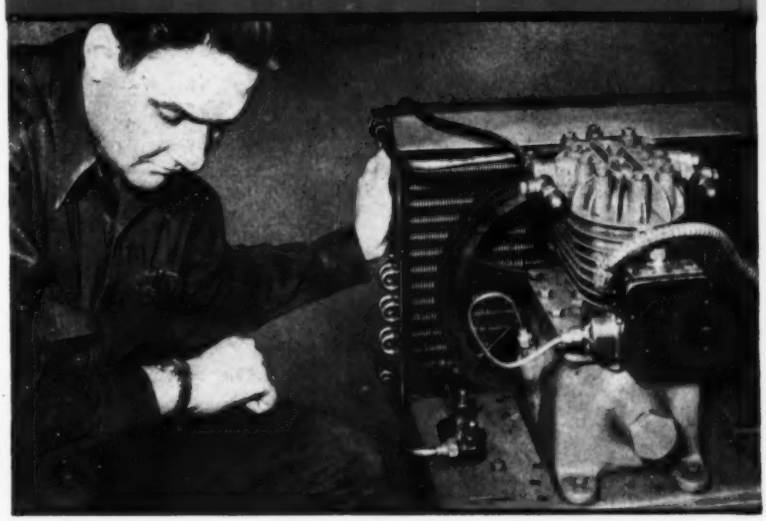
Harry J. Kain has been appointed to the sales staff of Tenney Engineering, Inc. With headquarters in the firm's Newark office, Kain will cover the New York City territory. He has over 15 years' experience in the refrigeration field and for the last 8 years he has owned and operated his own sales and service business in New York.

Paul B. Cressor, Jr., has been promoted to manager of purchasing for Eureka Williams Corp. Cressor joined Eureka Williams in 1946, as process engineer and has been in the corporation's purchasing department since 1947.

•

Edward F. Meer has been appointed as a field service representative for the commercial electric refrigeration division of Servel, Inc. Meer operated a refrigeration serv-

Time It Yourself!



How long does your present method take to dry the refrigerant so that the unit will operate without danger of repeat freeze-ups? 30 minutes? 2 hours? 12 hours?

It will surprise you to see how quickly Thawzone will clear up a moisture condition. Just time it! A few minutes are usually enough. 5, 10 or 20 minutes! And when you leave the job you can be pretty confident that you won't get an angry callback just as you get started on the next job.

Thawzone does a more thorough job, due to the way it functions. It is not a mere moisture holder or a mere antifreeze. Thawzone will DESTROY moisture. The moisture it eliminates is gone . . . it cannot come back. And, with another action, Thawzone neutralizes acids that accelerate the break-down of oil and cause corrosion. Nothing duplicates the moisture eliminating and protective action of Thawzone.

CONSIDER THESE ADVANTAGES:

A. Drying action not "smothered" by oil.
B. Cannot cause pressure drop.
C. Actually destroys moisture.
D. Helps neutralize the acids formed by constant breakdown of oil.
E. Costs only about 8 cents per pound of refrigerant treated.
F. For all "Freon" or methyl units.
G. Only ⅛ oz. per pound of refrigerant-required.

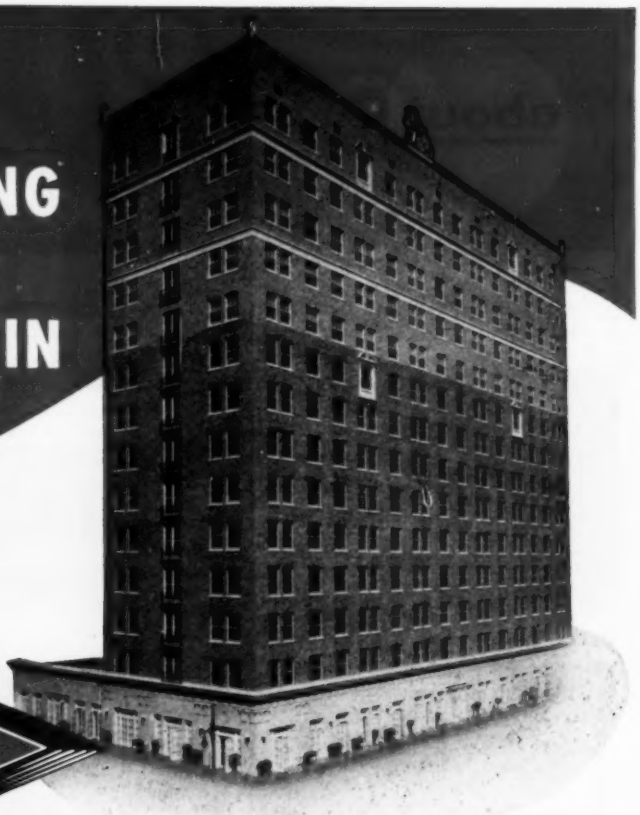
You can get Thawzone in 1 ounce, 4 ounce and pint bottles at your wholesaler. Highside Chemicals Co., Clifton, N. J.

THAWZONE®

The Only Product That Destroys Water... and Reaches All of it

Circle No. 18 on Reader Service Card

Quiet, Efficient AIR CONDITIONING Control at Austin's STEPHEN F. AUSTIN Hotel is Provided by...



JE

SOLENOID VALVES

Whether your visit to Texas' capitol be business or pleasure, make Hotel Stephen F. Austin your headquarters. The central location, exceptional food, modern air conditioned guest rooms with radio and television, make the "Stephen F." a favorite with sports fans, businessmen, and tourists alike.

To make sure of reliable temperature control at the "Stephen F." the contracting engineers for the air conditioning system, Decker and Roberts, of Fort Worth, Texas, chose JE Solenoid Valves.

It has been proven many times that the efficient performance provided by JE Solenoid Valves in each unit would mean quiet, dependable temperature control in each room.

Unconditionally guaranteed for 18 months.

ALL JE Solenoid Valves have these Five Major Features of Dependability:

- **Tight Seating—no bubble tolerance**
- **Simplicity—only two moving parts**
- **Long Life—cool coils**
- **Durability—all corrosion-resistant material**
- **Opening Pressure Differential—higher than most others on the market**

See Your Local Refrigeration Wholesaler, or Write Us Today for Details.

JACKES-EVANS MANUFACTURING COMPANY
4427 GERALDINE AVE. • Controls Division • ST. LOUIS 15, MISSOURI

Circle No. 19 on Reader Service Card

ice firm before joining a Cincinnati wholesale supply house in 1951 as an applications engineer. In his new position, Meer will handle contacts with Servel commercial refrigeration customers. His headquarters will be in Cincinnati.

•

H. N. Nafstad has been named assistant sales manager in charge of the Pak-A-Way home freezer division of Schaefer, Inc. He will be responsible for division sales in the United States and Canada. Nafstad was formerly district manager for U. S. Rubber Co. The division manufactures a complete line of upright and chest home freezers.

•

Mrs. Lee S. Worthington, director of advertising and secretary of Tranter Mfg., Inc., is the first woman to be named a director of the National Industrial Advertisers Association. She was elected to this post along with 67 other top industrial advertising executives at the organization's annual convention held recently in Pittsburgh. Less than 20 years ago she was a stenographer working in Grand Rapids, Mich. Today she is a member of the board of a multi-million dollar firm, besides being very active in business and civic affairs.

•

R. H. Roden, associated with La Crosse Cooler Co. since 1948, died recently as a result of a heart attack. Roden was manufacturer's representative in southwestern states including Texas, Arkansas, Oklahoma, Louisiana and Mississippi. He maintained office facilities in Ft. Worth, Tex.

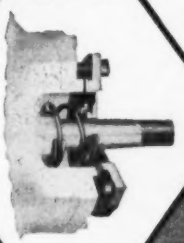
Harry D'Almaine has been appointed general sales manager of Howard Industries, Inc. His appointment starts a move on the part of the firm to establish concentrated areas for sales. In this respect, **F. Norton Park** has been made manager of the Chicago territory and **W. Edward Macbeth,** vice president of the company, is manager of the eastern territory, with headquarters in New York City. D'Almaine was formerly sales promotion and advertising manager for Wincharger Corp.

H. H. Falkingham and **W. H. Grant** have been appointed home heating and cooling sales representatives of General Electric Co.'s Air Conditioning Div. Falkingham's territory covers Kentucky, southern Indiana and part of western Ohio. His headquarters are in Louisville, Ky. Grant's territory includes Michigan and northern Indiana. His headquarters are in Detroit. Falkingham joined General Electric in 1952. He was formerly with Williams Oil-O-Matic as eastern field

Continued on page 59

ROTARY SEAL *Replacement Units*

UNIT No.



14222

Easy to Install .....
Efficient in Operation .....
Simple in Construction ....
Economical .....

Available in a complete range of sizes—including larger models for use in Commercial and Semi-Commercial Compressors, like those listed below.

BAKER • BRUNNER • CARRIER • COLDSPOT • COPELAND • CURTIS • FRIGIDAIRE • GENERAL ELECTRIC • KELVINATOR • NORGE • PAR • WESTINGHOUSE • YORK, *and many others*

AT ALL LEADING JOBBERS

THE *mechanical seals for* ROTARY SEAL COMPANY *rotating shafts*

UNITS FOR ALL STANDARD MAKES

"Seal with Certainty!"

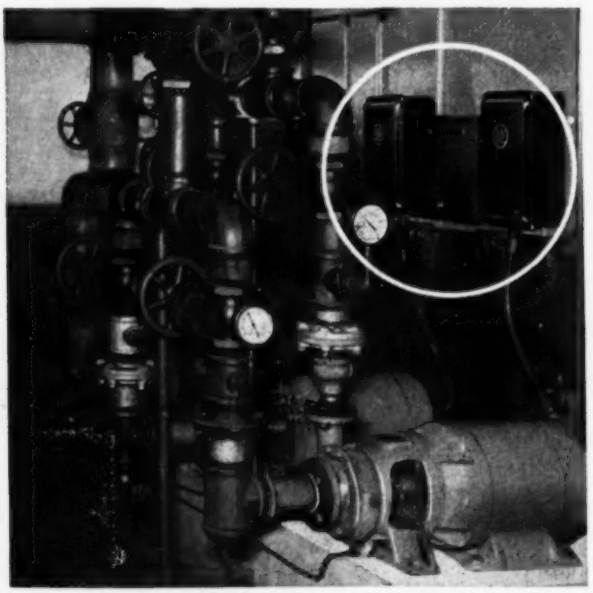
2020 NORTH LARRABEE STREET
CHICAGO 14, ILLINOIS, U. S. A.
CANADIAN AGENT: 2025 ADDINGTON AVENUE, MONTREAL 28, QUEBEC, CANADA

Circle No. 20 on Reader Service Card

INGERSOLL-RAND MOTOR PUMPS operated by

ALLEN-BRADLEY

TROUBLE FREE MOTOR CONTROLS



Two Ingersoll-Rand motor pumps, equipped with Allen-Bradley control, serving a cooling tower in a large office building.

● Why are Allen-Bradley automatic starters so popular for refrigeration and air conditioning service? . . . Because they are trouble free.

Why are they trouble free? Only ONE moving part. No pivots, pins, or bearings to corrode or stick . . . no jumpers to break. You install them . . . and forget them! No contact maintenance . . . Allen-Bradley cadmium silver alloy contacts never need cleaning, filing, or dressing.

Dependable overload relays . . . Allen-Bradley thermal relays are accurate and always dependable . . . even after years and years of service.

The Allen-Bradley trademark stands for millions of trouble free operations. Specify Allen-Bradley controls, today.

Allen-Bradley Co., 1340 S. Second St., Milwaukee 4, Wis.

TYPICAL ALLEN-BRADLEY REFRIGERATION CONTROLS

SPECIAL REFRIGERATION CONTROL UNIT

PRESSURE AND TEMPERATURE CONTROLS

MANUAL STARTER

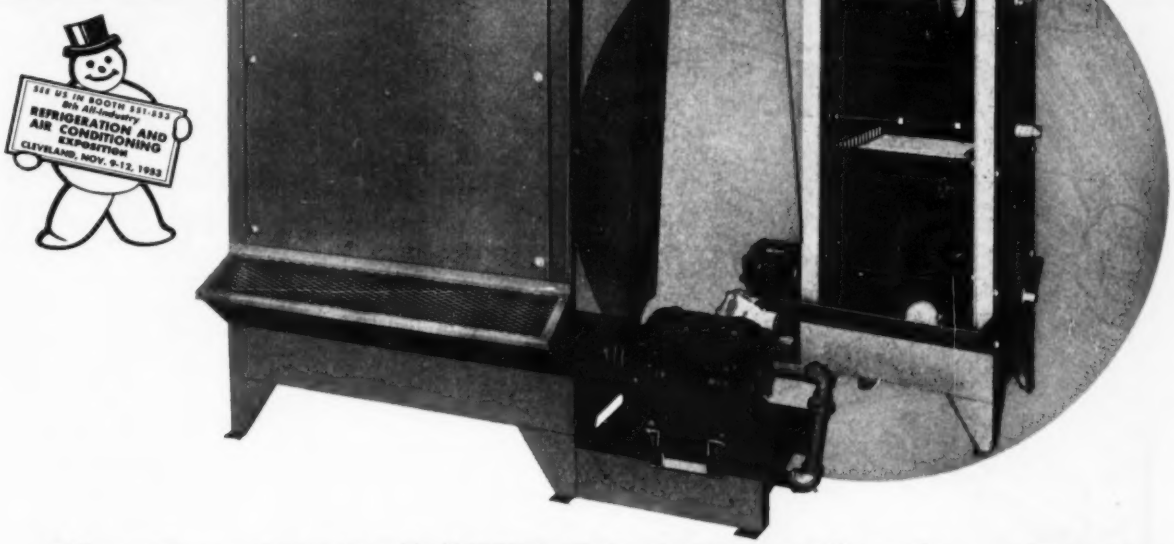
COMBINATION STARTER

ALLEN-BRADLEY SOLENOID MOTOR CONTROLS

QUALITY MOTOR CONTROLS FOR HEATING, VENTILATING, AIR CONDITIONING, & REFRIGERATION INDUSTRIES

Circle No. 21 in Reader Service Card

LARKIN MET THE CHALLENGE
for a low-cost, high-quality cooling tower



The New CT Model HYDRO-MISER Line is a Wow!

WRITE FOR DESCRIPTIVE FOLDER

Gives all the information about the new CT Model Hydro-Miser Cooling Tower. Write for a copy today.

OUR wholesalers and their dealers said: "Give us a high-quality, low-cost cooling tower that will meet the needs of our customers."

We did! It's the brand-new CT Model Hydro-Miser Cooling Tower—10 models—ranging in capacity from 3 to 50 tons.

They saw. They liked. They bought. From North, East, South and West orders are pouring in. And our plant is turning them out in ever-increasing quantities.

If you, as a dealer, want to cash in on this ever-growing cooling tower market—get in touch with your wholesaler now!

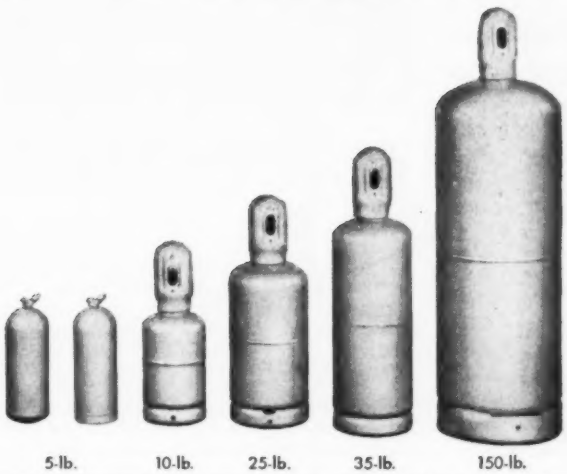
LARKIN COILS INC.
Box 1699
ATLANTA, GEORGIA

Circle No. 51 on Reader Service Card

I had a dream dear
See you at the
8th ALL-INDUSTRY
REFRIGERATION
AND AIR CONDITIONING
EXPOSITION
November 9-12, 1953
Booth No. 401
MUNICIPAL
AUDITORIUM
CLEVELAND,
OHIO
CHICAGO
CINCINNATI
CLEVELAND
NEW YORK - CLEVELAND
PHILADELPHIA
ROGER!
ST. LOUIS
COAST TO COAST
REFRIGERATED TRUCK
OPERATIONS
LAWSON
ATLANTA
DALLAS
LOS ANGELES
EQUATOR
For All Sizes and Types of Refrigeration and
Air Conditioning Applications Sporlan Manufactures
SOLENOID VALVES • PILOT CONTROLS • REFRIGERANT DISTRIBUTORS
STRAINERS Catch-All FILTER-DRIERS and
the Only THERMOSTATIC EXPANSION VALVES with
SELECTIVE CHARGES C-Z-G-X for Direct Expansion Systems
SPORLAN
LEVEL-MASTER CONTROL
for Flooded Systems
SPORLAN VALVE COMPANY
7525 SUSSEX AVE. • • • ST. LOUIS 17, MO.
EXPORT DEPARTMENT • 89 BROAD ST. • NEW YORK 4, N. Y.

DON'T SETTLE FOR LESS ....

use Prest-O-Lite Trade-Mark CYLINDERS FOR REFRIGERANTS



- ✓ Rugged, sturdy construction
- ✓ Uniform sidewall thickness
- ✓ Lightweight—easy to handle
- ✓ Finest workmanship
- ✓ Best appearance
- ✓ Tested far beyond all codes
- ✓ Extra years of trouble-free life
- ✓ They're economical!

You are *sure* that your refrigerant gas containers will give you many years of dependable service—and save you extra dollars—when you own PREST-O-LITE cold-drawn cylinders. They're built by the company which has been the largest manufacturer and *user* of compressed gas cylinders for almost half a century. In each step of design and fabrication the ultimate in gas containers is achieved—and this skill and experience is passed on to you with every PREST-O-LITE cylinder you get. It's no wonder that refrigerant cylinder buyers who have compared feature for feature have found out they are getting the greatest value with top-quality PREST-O-LITE cylinders.

Available in sizes ranging from 5-lb. to 150-lb. capacities—with valve, and cap on all but 5-lb. styles. A few of the popular squat-type cylinders are shown above. You'll like their good-looking appearance, with glossy metallic bronze finish. WRITE TODAY for full information and prices—select the PREST-O-LITE cylinder that fits *your* needs exactly.

MADE BY Linde

"Prest-O-Lite" is a registered trade-mark of Union Carbide and Carbon Corporation.

LINDE AIR PRODUCTS COMPANY
A DIVISION OF UNION CARBIDE AND CARBON CORPORATION
30 East 42nd Street UCC New York 17, N. Y.
Offices in Other Principal Cities
In Canada: DOMINION OXYGEN COMPANY, LIMITED, Toronto

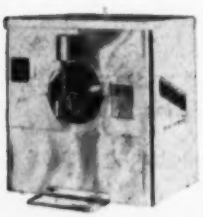
Circle No. 58 on Reader Service Card

WHAT YOUR FOUNTAIN CUSTOMERS NEED— SWEDEN MAKES!

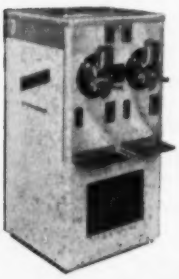
- **Most Complete Line of Ice Cream Freezing-Dispensing Equipment Ever Offered**

There's a SWEDEN Speed Freezer to meet *every* need, *every* budget:

Table and floor models. Single head machines. Double head machines for variety of products, or continuous service of a single product. Single and double heads. Sizes from 4-quart to 5-gal. Batch, continuous and automatic continuous freezers. Advanced design and superior engineering, automatic freezing controls for simple operation. Sturdy construction, and accessibility of all parts for quick easy cleaning are standard SWEDEN features.



Dispensing soft ice cream, frozen custards, malts and shakes and other long-profit specialties with amazing speed . . . a SWEDEN gives more service, requires *less* servicing. Pays for itself out of EXTRA profits!



For more information, write today to:

SWEDEN SPEED FREEZERS "the FOUNTAIN FREEZER"

SWEDEN FREEZER MANUFACTURING CO.
Dept. R-6 SEATTLE 99, WASHINGTON

Circle No. 25 on Reader Service Card

(Advertisement)

"NO INSULATION MAINTENANCE NEEDED OVER 20-YEAR PERIOD"

Don D. W. Lambert, Jr., United's District Manager, Albany, with William Finke, President of Finke's Ice Cream Company, standing in front of a Can-Passing Vestibule discussing its merits.

"We made our first installation of United Cork Companies' corkboard insulation at our ice cream plant in 1933," reports Bill Finke. "Engineers from United Cork's Albany office worked closely with us in the design of the installation, and United Cork crews handled the complete erection job.

"Because the original installation was so effective, we have consistently used United Cork Companies' products and engineering services in the many expansions we have made in our refrigerated spaces since 1933. None of the corkboard has required any maintenance attention.

"We have had no hesitation in recommending United Cork Companies to our distributors when they were planning insulation jobs."

Local Engineering Service

Finke Ice Cream Company, like thousands of other companies requiring low-temperature insulation, benefited by the on-the-spot engineering and erection services offered by United Cork Companies' chain of branch offices located throughout the country. Engineers and erection crews at these offices are prepared to work closely with plant owners, architects, general contractors and refrigeration contractors in planning and making the complete insulation installation.

These services assure the most effective use of the outstanding insulation advantages inherent in United Cork's BB (Block-Baked) Corkboard. BB Corkboard is made from carefully selected grades of cork, and the granules are block-baked, by a patented process, to form corkboard which contains no added binder.

Integrated Responsibility

United Cork Companies thus offers unified responsibility at every stage from the selection of raw materials through the manufacture of the corkboard to its complete erection. The branch office handling the engineering and installation also checks on performance to assure complete customer satisfaction.

For detailed information on the scope of United Cork Companies' services—and on the performance of installations under the most severe service conditions—just write to United Cork Companies, Dept. 1-8, Kearny, N.J.

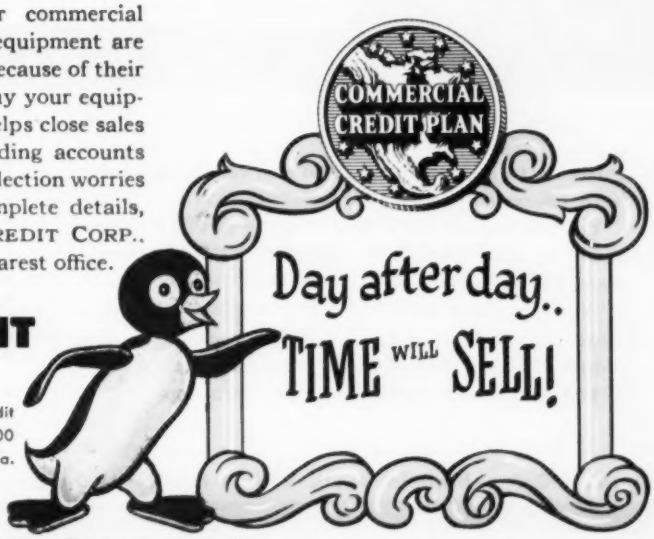
Circle No. 26 on Reader Service Card

IF YOU WERE Your Prospect

which deal would YOU buy?

Feature Time Payments to close more sales with the *COMMERCIAL CREDIT PLAN*

MORE AND MORE prospects for commercial refrigerating and air conditioning equipment are becoming, of necessity, TIME BUYERS. Because of their cash position it's the only way many can buy your equipment. The COMMERCIAL CREDIT PLAN helps close sales . . . improves your cash position by avoiding accounts receivable. And you turn your credit and collection worries over to COMMERCIAL CREDIT. For complete details, facts and figures, write COMMERCIAL CREDIT CORP., 14 Light Street, Baltimore 2, Md. or our nearest office.

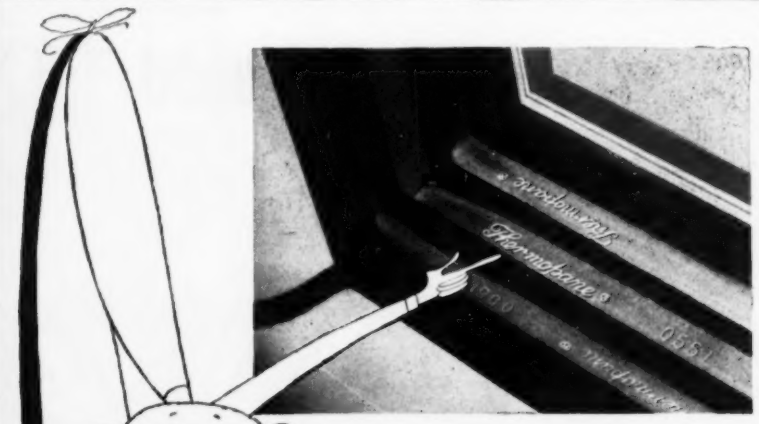


COMMERCIAL CREDIT CORPORATION

A service offered through subsidiaries of Commercial Credit Company, Baltimore . . . Capital and Surplus over $135,000,000 . . . offices in principal cities of the United States and Canada.

Circle No. 27 on Reader Service Card

If YOU'RE bent on easier sales



How to be sure the glass in a refrigerated case is sealed from dirt and moisture

Only *Thermopane** insulating glass has the famous *Bondermetic Seal** which prevents moisture and dirt from getting between the panes. This seal is metal-to-glass . . . no organic material that can deteriorate or leak.

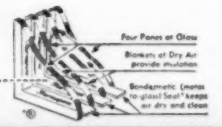
To make sure the next case you buy has a *Thermopane* visual front, look for the *Thermopane* name imprinted on the seal between the panes. You'll find it on all the better refrigerated cases.

LIBBEY·OWENS·FORD GLASS COMPANY
3493 NICHOLAS BUILDING TOLEDO 3, OHIO

L·O·F GLASS FUELS

Thermopane INSULATING GLASS

LOOK FOR THE NAME ON THE SEAL BETWEEN THE PANES



Point out to your customers that *your* refrigerated cases have *Thermopane** insulating glass fronts.

Your customers have been reading ads like the one above in their own publications and they know and want *Thermopane.*

To help close sales, why not display reprints of these ads and take advantage of *Thermopane* as a sales point. Write Libbey·Owens·Ford Glass Company, 29103 Nicholas Building, Toledo, Ohio. *®

Your customers saw the above ad in:

ICE CREAM REVIEW.....JUNE
QUICK FROZEN FOODS....SEPTEMBER
MEAT MERCHANDISING.....OCTOBER
FOOD TOPICS.....DECEMBER

See the L·O·F exhibit in Booth 835 at the Refrigeration & Air-Conditioning Exposition in Cleveland

"TWO HEATING SEASONS AND NOT A SMUDGE ON CEILING OR WALLS,"

reports John J. Albert
Hobart Thomas Co.
Bethel, Connecticut

"EVERY HOME INSTALLATION of Kno-Draft Overhead Air Diffusers we've made," says Mr. Albert, "has brought owners' comments that this is the finest, most economical heating they've ever enjoyed.

"But what women especially like is the fact that Kno-Draft never smudges walls or ceilings. With conventional methods of warm air heating, the rising warm air is bound to darken ceiling and walls. Not so with Kno-Draft. We've had Kno-Draft Diffusers in use for two winters now and ceilings, walls and drapes are still clean and fresh.

"Aside from customer satisfaction we, as contractors, find that Kno-Draft Overhead Air Diffusers are easy and economical to install, requiring little preliminary engineering paper work. This means we can do a fast effective job and make a better profit."

Kno-Draft Overhead Air Diffusers are "catching on" everywhere. They're going into more and more individual homes and building developments. Mail the coupon for complete engineering details and cash in on this most revolutionary home heating advance of the century.

NOW AVAILABLE WITH INTEGRAL LIGHTING

You can now get Kno-Draft Overhead Air Diffusers with a handsome, efficient lamp as an integral part of the unit. Complete information on request.

CONNOR ENGINEERING CORPORATION

kno·draft®

residential air diffusers

CONNOR ENGINEERING CORP.
Dept. C-103, Danbury, Connecticut

Please send ( ) full information on Kno-Draft Overhead Air Diffusers; ( ) data and prices on the new Kno-Draft Integral Lighting Fixtures.

Name .....
Position .....
Company .....
Street .....
City ..... Zone ..... State .....

Circle No. 28 on Reader Service Card

NOW Make sure you get

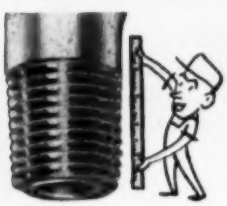
TRIPLE-SEAL Tightness in every joint

"It's All in the Groove"

IMPERIAL *Triple-Seal*

HEAVYWEIGHT FLARE FITTINGS

Imperial Heavy-Duty Triple-Seal Flare Fittings have 3 seals to give you new extra protection against leakage.



LONG LENGTH DRYSEAL PIPE THREADS

assure tighter joints—are especially valuable in providing additional takeup in reconnection.

PLASTIC CAPS

on flared ends protect fittings during shipping and handling.

Assure extra protection against leakage

Here is how it works: When the flare nut is drawn up, the copper tubing is forced into the groove as well as against the two faces of the seat making a tight, *triple-seal* joint. This feature provides *extra* protection against leakage; enables these fittings to hold higher pressures. Groove is included on all sizes ⅜" and larger.

In addition, Imperial Triple-Seal Heavy-Duty Flared Tube Fittings are heavier than ordinary flared fittings, have greater wall thicknesses and larger wrench flats. Elbows, tees and nuts are *forged* for greater strength. Designed for refrigeration applications.

Long Dryseal pipe threads on pipe thread ends assure tight joints—are especially valuable in reconnecting.

Now, use Imperial Triple-Seal Flare Fittings . . . make sure you get this extra protection against leakage.

See Your Jobber

Ask for Catalog No. 80

THE IMPERIAL BRASS MFG. CO. • 536 So. Racine Ave. • Chicago 7, Ill.

In Canada: 334 Lauder Ave., Toronto, Ontario

IMPERIAL

FITTINGS • VALVES • DRIERS • CHARGING LINES
TOOLS for Cutting, Flaring, Bending, Pinch-Off, Swedging

Circle No. 29 on Reader Service Card

NEW AMPROBE JUNIOR

VOLT-AMP TESTER

$19.85

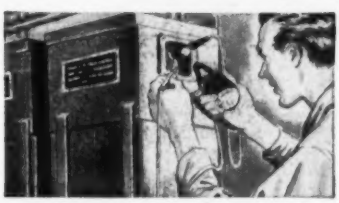
INCLUDING VOLTAGE TEST LEADS

ACTUAL SIZE

One pocket tester does the complete job

IT'S A SNAP-AROUND AMMETER

Measures current instantly without shutdowns or breaking of insulation for ammeter connections.



IT'S A VOLTAGE METER

Measures voltage quickly, accurately on a full-sized calibrated scale; eliminates guesswork.

Gives you tester ruggedness with instrument accuracy (within ± 3% of full scale)

PICK THE RANGE THAT FITS THE JOB:

MODEL "10": 0- 10 AMPS A-C 0-125/250 VOLTS A-C
MODEL "25": 0- 25 AMPS A-C 0-125/250 VOLTS A-C
MODEL "50": 0- 50 AMPS A-C 0-125/250 VOLTS A-C
MODEL '100": 0-100 AMPS A-C 0-125/250 VOLTS A-C

Now every service man can be equipped with this time-saving pocket tool. The Amprobe Junior pays for itself the first month alone by taking the guesswork out of installation and servicing jobs. When you "Amprobe" it, you get it right the first time and eliminate costly call-backs. Write today for Catalog No. 73, Pyramid Instrument Corporation, Lynbrook, New York (Export Division: 458 Broadway, New York 13. Cable: Morhanex).

IF YOUR JOB CALLS FOR A MULTI-RANGE AMPROBE:

AMPROBE "300"

0-6/15/30/60/150/300 AMPS AC.
0-150/300/600 VOLTS AC.
$49.50 COMPLETE WITH LEATHER CASE AND VOLTAGE TEST LEADS.

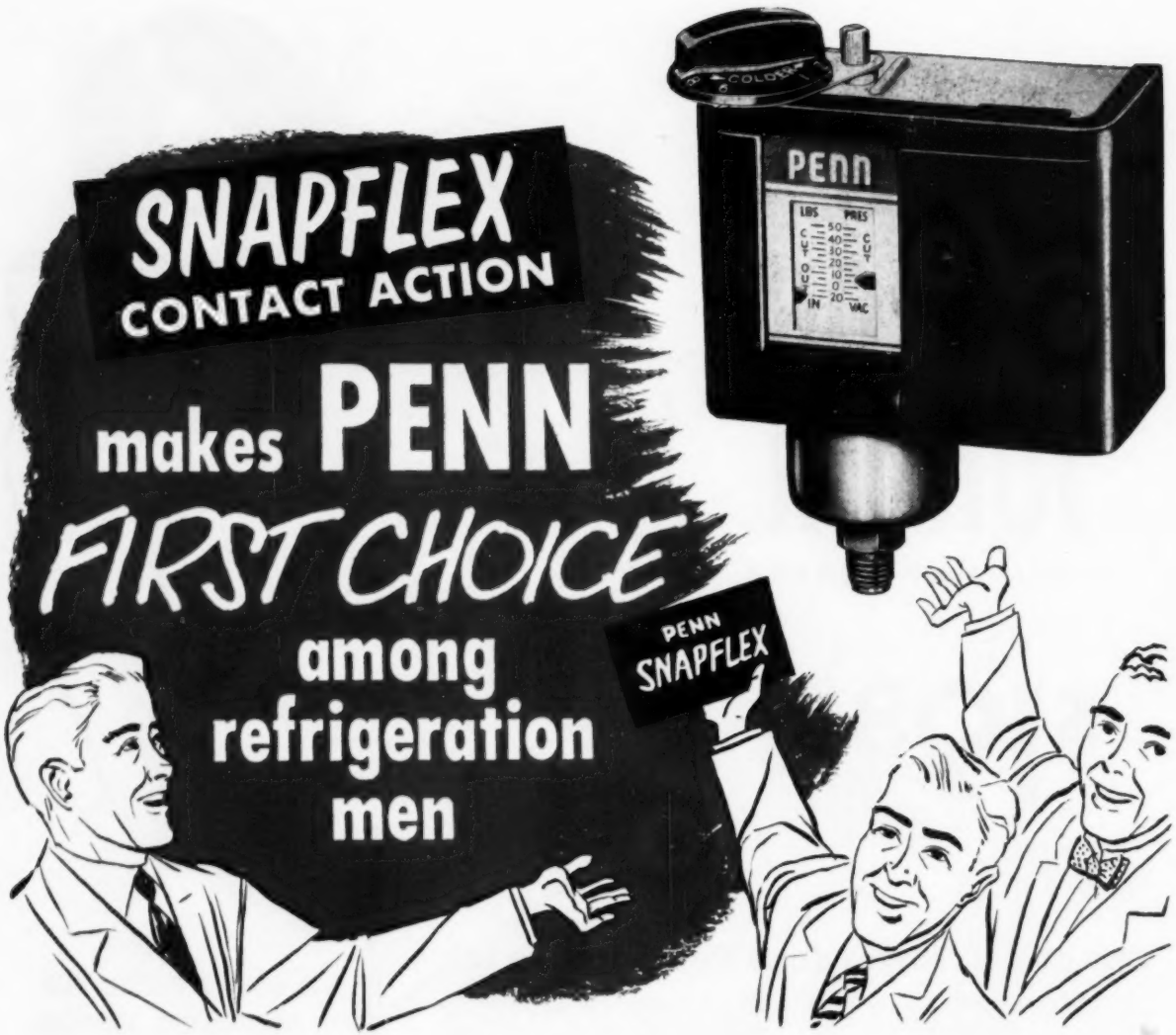
AMPROBE "600"

0-15/30/60/150/300/600 AMPS AC.
0-150/300/600 VOLTS AC.
$59.50 COMPLETE

AMPROBE "1200"

0-15/60/150/300/600/1200 AMPS AC.
0-150/300/600 VOLTS AC.
$67.50 COMPLETE

Circle No. 30 on Reader Service Card



Recently introduced, the new PENN single-pole refrigeration control is winning the enthusiastic acclaim of refrigeration men everywhere. And, one of the *big* reasons is SNAPFLEX contact action!

Only PENN has this exclusive contact structure which provides "roll-wipe-snap" action on closing and opening. Result? No bounce . . . no closing arc . . . no welding of contacts. What does this mean to you? Longer life and better performance than *any other* single pole control available!

Learn more about this new Series 270 *low-priced, single-pole control.* Ask your wholesaler or write **Penn Controls, Inc., Goshen, Indiana.** Export Division: 13 E. 40th Street, New York 16, N. Y., U. S. A. In Canada: Penn Controls Limited, Toronto, Ontario.

PENN

AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, GAS APPLIANCES, PUMPS, AIR COMPRESSORS, ENGINES

Circle No. 31 on Reader Service Card

BTU NEWS · LAWS · TRENDS

OUTSIDE TEMPERATURES AS LOW AS 22 F didn't stop a residential earth heat pump from operating successfully during the winter of 1950-51, according to Merl Baker, associate professor of mechanical engineering at the University of Kentucky. Before the recent semi-annual meeting of the American Society of Heating and Ventilating Engineers in Denver, Baker stated that the operating cost of an earth heat pump with a heating energy ratio of 3.05 is competitive with conventional systems in areas having low or medium electrical rates. The nine-room house in which the heat pump was installed contains a volume of 16,000 cu. ft. and has a heat loss of 48,000 Btu per hour based on 70 F. inside and –5 F outside. Performance data during the 1950-51 heating season, 4327 degree-days, revealed that the house was heated by an electric consumption of 3628 kilowatt hours.

INDIVIDUAL SERVINGS of frozen orange juice are packed at 17 F on automatic machines that make, fill and seal the new 2½-ounce pouches to hold the frozen concentrate. Developed by Pasco Packing Co., Dade City, Fla., the pouches are a Bakelite resin and cellophane lamination. Rolls of the laminated film are fed into an automatic machine that folds, heat seals sides, and cuts apart individual pouches. The machine automatically fills the pouch with a 17 F slush of concentrate and heat seals the top. The pouches are then conveyed on a continuous belt through a –40 F air blast freezer and emerge at a collection table where pouches are packed 72 to a carton. Prior to shipment, cartons are stored in a –20 F warehouse.

BUYING MILK FROM VENDING MACHINES is now possible in New York City where such refrigerated dispensers have been permanently installed in some 70 apartment buildings. Fresh milk is available at all hours and is priced several cents below home delivery prices. Milk is kept refrigerated during the time it remains in the vendor. The mechanical milkman, made by Rowe Corp., combines two service sections so that two customers can purchase milk at the same time.

FROZEN FOOD LOCKER PLANTS are becoming important sources of commercial frozen food for their locker patrons, home freezer owners, and others — including stores, institutions and restaurants — according to a study of 1,350 plants throughout the country made recently by the Farm Credit Administration of the U.S. Department of Agriculture. About two-thirds of the plants surveyed were selling frozen foods. Percentage was highest in the North Atlantic states (82% average), lowest in the South Central section (54% average). Salves volume per plant was about $8,400 in 1952 on the average, with 4% reporting sales of more than $50,000. Retail sales of frozen foods to patrons and other consumers was 72% in 1952. Sales to commercial establishments amounted to 28% last year.

GUARANTEED WEATHER IS A MUST to apartment house tenants these days. As a result, air conditioning has become the biggest new idea in apartment building. According to a recent issue of *Architectural Forum*, apartment investors are facing up to the fact that tomorrow's apartments may have to be air conditioned to compete with the lower costs and rents of yesterday's buildings. "Apartment air conditioning has made the most headway along the East Coast from New York to Florida and across the South to Texas," the magazine reports, "but increasing activity is reported almost everywhere." Because air conditioning is insurance against future obsolescence, especially in the high-rent-high-temperature areas, the Federal Housing Authority considers central cooling a "very desirable plus factor," according to the magazine, noting that the FHA will usually underwrite the first cost for apartment air conditioning.

Getting

THE WAY WE LOOK AT IT . . . . .

As a new company we decided it was imperative, as good business, that we tie our name to a product which would benefit us in succeeding years by virtue of customer satisfaction -- even if this equipment didn't have a highly advertised air conditioning name to help us in the beginning.

We feel that we have succeeded in that goal by selecting Westinghouse. So, we believe we have kept our first promise to ourselves -- to handle a product that would be a credit to our company and our personal reputations.

We're well on our way to keeping our second promise to ourselves. That was to have every company for whom we have installed Westinghouse air conditioning 100% satisfied with their installation. These customers have received the comfort they expected; the work was done as promised; the work was done when promised; attention was given to all details.

This makes us extremely proud because we know that while other air conditioning organizations in Cleveland may have more customers, none have more satisfied customers!

We sincerely hope that you will also see the value in having your air conditioning installed by Cleveland's most conscientious Air Conditioning Specialist.

CLEVELAND AIR CONDITIONING CORPORATION

TO PROSPECTS (above) and TO SUPPLIERS (right), Len Auerbach wrote these letters to help build the foundation of his new company on solid footings.

TO ALL OF OUR SUBCONTRACTORS AND SUPPLIERS

As a new business, Cleveland Air Conditioning is obviously extremely anxious to please its customers, but those of you who have known me in the past know that I have always had a phobia for doing everything possible to satisfy the people who have dealt with me.

In addition, I have a tremendous pride in keeping my word -- even when I make promises for or with you. If, at any time, you cannot deliver when you say you will, or cannot start some work when you say you will, please let us know so we can notify our customer. Part of the reputation we build is going to depend on how much you help us to keep our word. We think we have entrusted that part of our reputation to the right people.

Except for Westinghouse, our major supplier, no one company very often sells us very much -- materials or services -- for any one installation. Because of that, it is quite easy for you to look at the size of an individual order and decide that it is not large enough to merit your individual attention. It might be well to remember that our average air conditioning sale is over $3,400, and that we are expected to perform in the same way that we like to receive performance from others on an expenditure like that.

We hope that the business you do with us is sufficiently profitable to enable you to help us attain our goal -- to always be able to point to any of our installations with pride, knowing that each of our customers is a Cleveland Air Conditioning Booster.

LEONARD F. AUERBACH, President
CLEVELAND AIR CONDITIONING CORPORATION

THE DECISION IS YOURS!

Ours is an "ulcer business."

Though most folks don't realize it, we in the Air Conditioning field usually act as general contractors on most of our installations, employing sheet metal, electrical, plumbing, and insulation subcontractors.

That means that you're not just "buying a unit." You're actually engaging on a construction program -- with all of the potential aggravations that go with it.

We are old-fashioned enough to believe that we, not our customers, should get these ulcers. The only friends we have lost are the subcontractors who haven't done what they promised.

We would like to add your name to the list of those for whom we have conscientiously done what we promised to do, when we promised to do it, as we promised to do it.

We hope your decision will be to continue to stick to the aggravations of your business and to let us assume your Air Conditioning ulcers.

CLEVELAND AIR CONDITIONING CORPORATION

"ULCER BUSINESS" is how Auerbach described the air conditioning business in this revised letter sent out with all proposals submitted by his company.

Off to a "Write" Start

THE ultimate success or failure of any contracting firm can be traced in large measure to how soundly this firm was operated when it first started into business. The importance of "getting off on the right foot" cannot be over-emphasized, but unfortunately it's a matter to which the management of many new businesses — either through ignorance or through carelessness — pay far too little attention.

Not so Leonard F. Auerbach, president of Cleveland Air Conditioning Corp. From his experience in working for other companies in the field, Auerbach developed a firm conviction that it was just as important to sell your business, as well as your product, to the customer.

So when he formed Cleveland Air Conditioning Corp. a few years ago, Auerbach went out of his way to convince the people with whom he dealt that here was a company that knew which way it was going. Auerbach knew what his customers expected of his firm, and he also knew what he in turn expected from his company's suppliers.

He decided to make these facts abundantly clear to all concerned, so that right at the outset a feeling of confidence would be engendered in his organization. Auerbach wanted all of his customers and prospects to realize that here was a firm on which they could count to deliver the goods or complete the installation in full accord with every detail of the sales agreement.

To translate this aura of integrity and stability into concrete terms, Auerbach drafted a pair of letters which laid the cards right on the table.

Importance of "Good Faith" Is Stressed By New Contractor

The first of these letters was included with each job proposal prepared and sent out to prospects, after the company had a few jobs under its belt. It stressed the company's recognition of the importance of product quality and customer satisfaction. It pointed proudly to the fact that the firm had maintained its integrity by conscientiously keeping its promise to itself. And it closed by making a direct pitch for the business.

The second letter, quite similar in tone, was included with all purchase orders sent to suppliers and subcontractors with which the company did business. It made a point of the fact that Cleveland Air Conditioning Corp. took pride in keeping its word to its customers, and that in turn the company expected its subcontractors and suppliers to perform in like manner. Reasoning that his firm couldn't keep its commitments if materials or services contracted for weren't supplied at the specified time, Auerbach asked all suppliers and subcontractors for prompt notification whenever circumstances forced the altering of a delivery or completion date.

This second letter, while aimed specifically at suppliers and subcontractors, also was sometimes sent out to prospects with proposals as a further evidence of the company's good faith.

After Cleveland Air Conditioning Corp. had been in business for some time, Auerbach decided that his company couldn't — and shouldn't — remain perenially new, so he prepared a revised letter to supplant the one originally sent with proposals to customers and prospects. This letter he headed "The Decision Is Yours," and in it he described the air conditioning business, because of its many ramifications, as an "ulcer business," and closed by suggesting "let us assume your air conditioning ulcers."

How well did this unique way of introducing a new business work? Well, Cleveland Air Conditioning Corp. is now, after less than three years of operation, a recognized factor on the local air conditioning scene, with a healthy volume of business, expanded new headquarters — and a long, long list of satisfied customers.

Len Auerbach would be the last man in the world to suggest that any amount of artful promotion would take the place of sound business performance. But he does feel very strongly that in his own case, at least, his unique promotional letters definitely did help his firm establish a "quality" reputation far sooner than it could have on the basis of performance alone.

Refrigeration systems should be designed when the buildings are, for current construction trends underscore the fact that . . .

Modern Architecture Needs

Refrigeration dealer and architect should work hand in hand

MATCHING streamlined commercial refrigeration installations to the attractive, eye-appealing qualities of ultra-modern architectural design is rapidly becoming an important factor in the construction of restaurants, drive-ins, and other eating establishments, West Coast refrigeration dealers report.

And this blending must be accomplished without sacrificing any part of the basic function of the refrigeration equipment — the preservation of foods at the lowest possible cost — for efficient, economical refrigeration facilities are of ever increasing importance to food service operators in these days of fast-paced competition.

An excellent example of what can be accomplished along these lines is the installation completed by Interstate Restaurant Supply Co. for Merle's Coffee Shop, a swank drive-in operation at Corona Del Mar, Calif.

Owner Merle Afflerbaugh, a veteran restaurant operator with a quarter-century of experience, knew that to attract today's motoring public his establishment would have to boast some outstanding structural characteristics. He also knew that to operate efficiently and profitably his drive-in would have to incorporate food preparation and service equipment of the most modern type into a carefully planned and executed layout. In the Coffee Shop installation he got both.

The building design follows the contemporary modern motif, emphasizing functionalism. Clean, flowing structural lines, broad expanses of glass, and simple slump stone walls lend a particularly attractive eye-catching air to the drive-in.

At the front, a long, graceful roof overhang sweeps out over an open-air terrace, more than 50 feet in length, where 32 diners can be accommodated at gayly colored garden tables with full protection from the sun or inclement weather.

The roof of this elongated marquee is pierced and supported on the opposite end by an inverted pylon, upon which "Coffee Shop" is emblazoned in colorful neon. Two more neon signs, proclaiming "Merle's" are located on either side of the roof of the main structure.

Six of the eight walls of the octagon-shaped front serving section of the drive-in are comprised of glass windows, extending from floor to ceiling. The roof-overhang is carried out on the remaining sides of the structure, but to a lesser degree, providing a sheltered walk-way around the dining and serving area.

The front wall, facing the open air terrace, is left open and serves as a carhop service station. A rectangular stone structure is attached to the octagon-shaped front serving section on the rear wall, directly opposite the open air terrace. This section houses the main preparation kitchen, bake shop, rear carhop service station, vegetable preparation area and dish-washing department.

The arrangement of the ultra-modern refrigeration facilities in both the glass-walled front serving area and in the main kitchen at the rear reveals careful planning and engineering.

The refrigeration equipment was installed with a dual purpose in mind. Naturally, the primary purpose is the preservation of food and other perishables. However, no less important was the careful integration of the refrigeration equipment into the overall food handling and serving pattern to provide the utmost in convenience and promote greater efficiency among the attendants.

In order to successfully accomplish a task of this kind, it is necessary to plan the refrigeration facilities while plans for the building are in the drawing board phase. Undertaking this particular part of the job was

Modern Refrigeration

ULTRA MODERN? Certainly! But so is the refrigeration system which serves this West Coast drive-in. For full details of the equipment installed, turn the page . . .

As the carhop sees it, the drive-in is designed for peak efficiency, speedy service

Lon M. Megowan, installation manager of Interstate Restaurant Supply Co. He was assisted by James D. McCampbell, commercial and air conditioning sales manager for the Los Angeles branch of Frigidaire, on the refrigeration phase of the job.

A better understanding of the importance of this type of advance planning is evident if the food preparation and service facilities of this ultra-modern drive-in are examined carefully.

At first glance, refrigeration seems to be conspicuous only by its absence. But upon closer inspection, the visitor will find that modern equipment is here, there, and virtually everywhere. Refrigeration facilities, although for the most part hidden from the eye, are strategically located so as to be at the fingertips of those preparing and serving foods.

The octagon-shaped front serving section of the drive-in, with an overall dimension of about 40 feet, provides an extremely efficient food serving operation. The basic design of the structure affords a smaller eight-sided food preparation "island" in the center, ringed by counters and a carhop check-out station on the side facing the open-air terrace.

Thirty-eight persons can be accommodated on as many upholstered stools at the serving counters. A door in the remaining wall at the rear leads to the main kitchen and dishwashing department.

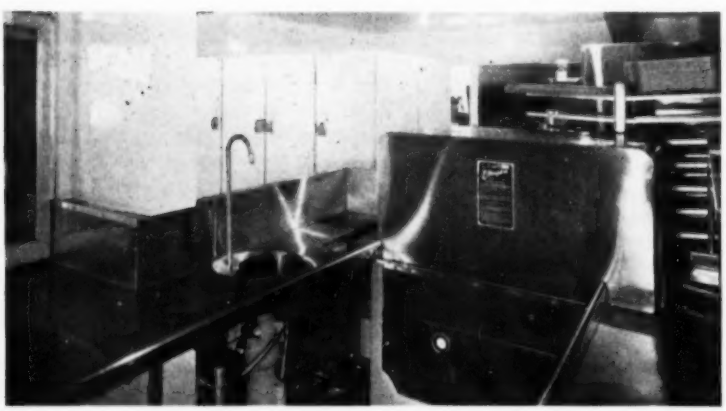
The side on which the carhop service station is located has been left open. A stainless steel counter set up as an "island" under the protected roof overhang, faces a modern refrigerated fountain section and provides a walk-way between for carhops to pick up trays, napkins and other necessary items without actually entering the food serving area.

In addition to providing modern refrigerated fountain facilities, this 16½′ long section contains two sinks and three large coffee urns, plus ice bins and water stations at either end which are conveniently located for carhops. A cashier's station is located about midway in the fountain section. Food is served both to carhops and to patrons at the counters through an aperture leading from the food preparation area forming the island in the center.

The food preparation center proper is a gleaming eight-sided package of stainless steel conforming with the shape of the overall building wall. Shelves facing diners at the counters have been built up to about eye level on all sides, forming a partition. Two of these shelves are refrigerated and are used for retaining the attractive appearance and flavor of perishable delicacies on display.

Inside the food preparation island are complete short-order food preparation facilities. All refrigera-

Continued on page 48

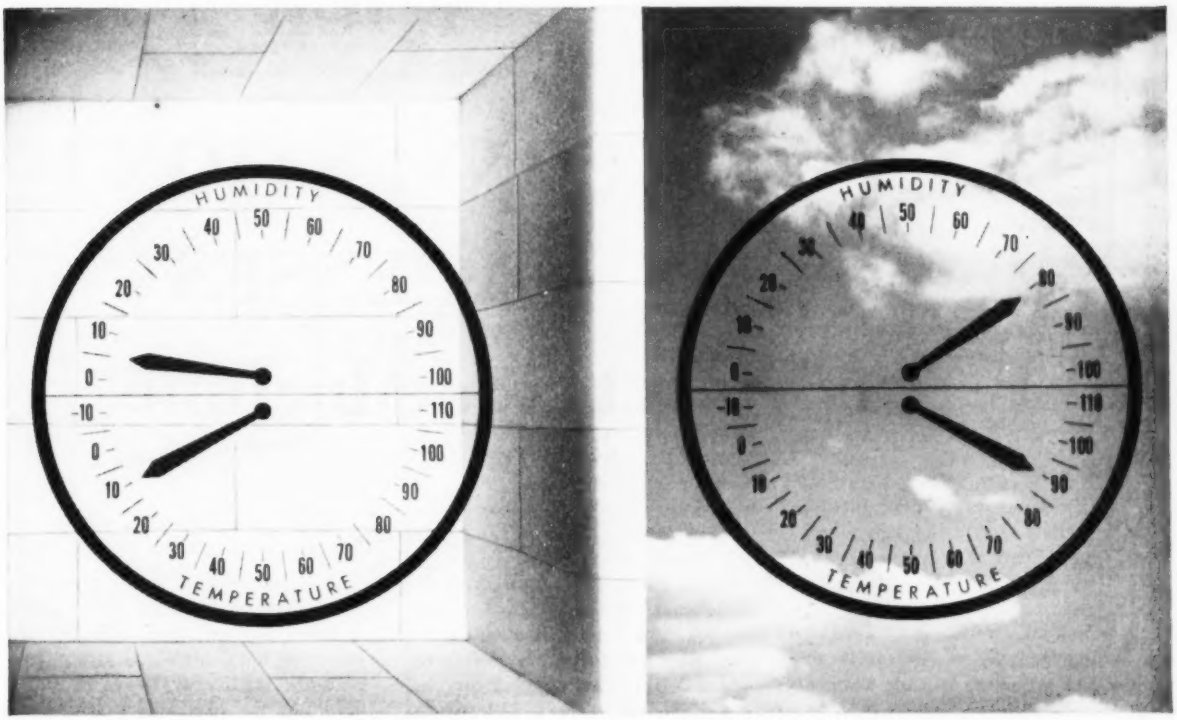


Reach-in boxes are used for bulk storage of perishables to provide maximum flexibility

DOW

STYROFOAM INSULATION KEEPS COLD IN—WATER VAPOR OUT!

Lightweight STYROFOAM insulation offers low thermal conductivity and excellent water and water-vapor resistance. Easy to install



The Dow Chemical Company
Plastics Department PL 1490, Midland, Michigan

Please send me your booklet containing information on Styrofoam, the most nearly perfect low-temperature insulation material.

Name_____

Title_____

Company_____

Address_____

City_____ State_____

Styrofoam® is a lightweight plastic (Dow polystyrene) expanded about forty times. The resultant plastic foam is composed of millions of tiny individual-sealed dead air cells, which act as moisture barriers and provide Styrofoam's outstanding low-temperature insulation characteristics. Styrofoam is odorless, resists mold and rot, and is unattractive to vermin.

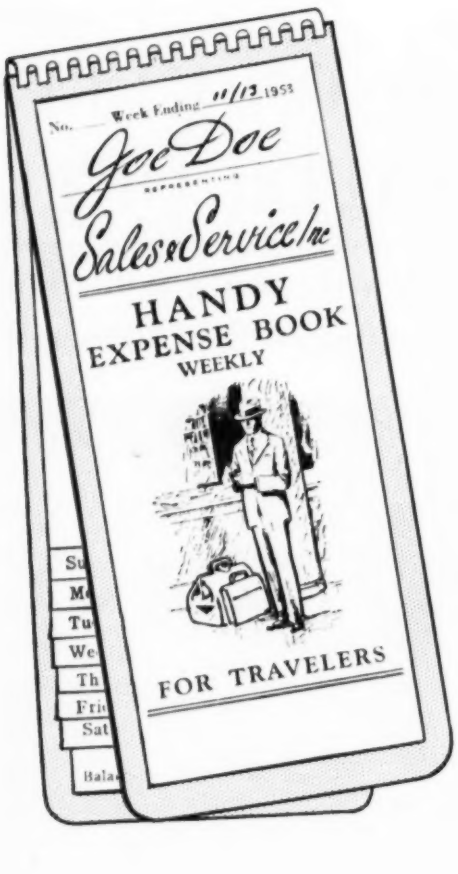
Available in rigid board form, Styrofoam can be cut to desired shapes with conventional hand or power woodworking tools. It is easy to handle and install in larger pieces due to its remarkably light weight.

Whatever your low-temperature insulating problem may be, investigate Styrofoam. Laboratory tests and field performance have shown it to be the most nearly perfect low-temperature insulating material yet developed. It delivers effective insulation at an extremely low cost per year of service life. Write today for your free Styrofoam data booklet. THE DOW CHEMICAL COMPANY, Plastics Department, Midland, Michigan.

you can depend on DOW PLASTICS

DOW

Circle No. 32 on Reader Service Card



How to make YOUR CONVENTION EXPENSES tax deductible

by Harold J. Ashe

ALL of the legitimate expenses incurred by a contractor or dealer in attending a trade association convention are income tax deductible. Nevertheless, a good many refrigeration men, because they are away from the business, neglect to treat convention outlays as a business expense. They fail to enter such expenses on their books upon their return home. Many contractors and dealers are still unaware that such expenses are tax deductible. Sole proprietors, co-owners and those operating as family corporations are disposed to consider it immaterial whether such expenses are reflected in business records or not. However, tax-wise, it can be expensive to overlook such charges.

Even though a contractor's taxable income is entirely in the lowest tax bracket, the cost of attending a trade convention will reduce his income tax by better than $22 for every $100 of convention expense. Or, stated another way, the net cost of attending a convention is only 78 cents for every dollar of convention outlay. Contractors in higher income brackets will reduce their income tax even more substantially, or have the net cost of convention attendance reduced even more.

Attendance at a trade convention or other trade event is recognized as a necessary business function by the Bureau of Internal Revenue. However, not all expenditures made while at a convention are necessarily tax deductible. The test is whether the particular expense is for business or is purely personal.

Expenses which will not be challenged include bus, train or plane fare, or the cost of driving a car, hotel or motel bills, meals and tips, as well as convention registration fees and other necessary charges made on the delegates by the association.

It is advisable to build a record of convention expenses. These may include transportation ticket stubs, receipted hotel bills and any other evidence readily available to support (1) the fact such a trip was made and indicate (2) the number of days away from home.

Ordinarily, receipts are not available for meals, tips, etc. However, the receipted hotel bill will support unreceipted meal expenses if the latter are within reason. That is, if a hotel bill shows a three-day stay this is pretty good evidence indicating the purchase of eight or ten meals, plus meals en route.

Even if a taxpayer has already attended a trade convention, and has failed to record his expenses for purposes of tax reduction, it may not be too late to reconstruct a partial record and make a close estimate of actual outlays. While the Bureau of Internal Revenue generally insists on receipts and other evidence of expenditures, it

may accept a "guesstimated" outlay if it appears to be conservative and there is some evidence such a convention trip actually was made.

At worst, the expense may be partially disallowed, so it is worth reflecting the expense in the income tax return. The sooner such a taxpayer tries to reconstruct his convention expenses, the more likely he is to have his estimate accepted without challenge.

A special effort should be made to separate purely personal outlays from necessary business expenses incident to attending a convention. In the former category are theatre tickets, night club expenses and liquor bills.

If a taxpayer's wife attends a trade convention her expenses may or may not be deductible, depending upon her relationship to the business. If she is an active partner in the business, or works in it, her expenses are deductible for tax purposes. Otherwise, they are not. In the latter event, only part of the total expenses of the taxpayer and his wife will be tax deductible.

For your file of
BETTER BUSINESS METHODS

Care should then be taken to segregate the husband's expenses from those of his wife. Thus, if a hotel room rents for $5 single or $7.50 double, $5 would be a legitimate business deduction for the husband. Meal expenses, preferably, should be kept separate, making a division between those deductible (the husband's) and those non-deductible (the wife's).

As soon as actual or estimated convention expenses are determined, an entry covering the deductible total should be made in business records so that the expense will show up automatically at income tax filing time. Such an entry should be backstopped by a memorandum listing a break-down showing how the expenses were distributed, and further supported by all available receipts.

UNDERGROUND LAUNDRY in a Connecticut hospital is fully air conditioned by an installation made by Ace Sales & Service Co.

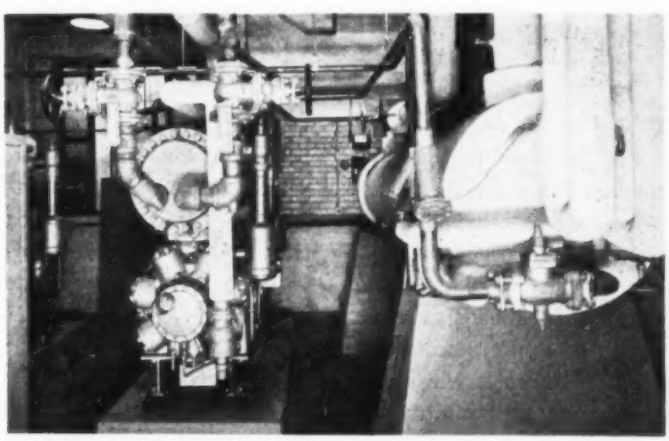
150 Tons of Laundry Cooling

WHAT is believed to be the largest underground, air conditioned laundry in the world serves the new 1,500-bed Grace-New Haven Community Hospital. Located in the basement of the 9-story, 340-bed Memorial unit, the laundry requires 150 tons of refrigeration, provided by two 75-hp Chrysler Airtemp radial compressing units, to permit laundry personnel to meet the needs of the hospital.

In the year-round air conditioning system, both heating and cooling coils are located in the air ducts. The central-station system uses a two-circuit water chiller in addition to the radial compressors. Chilled water coils, blowers and air filters are located in a first-floor room directly above the laundry.

Outside air is brought into the laundry where it is tempered, filtered, and distributed through high velocity ducts to all parts of the laundry. City water is used in the condensers to cool the refrigerant. It is heated to about 100 degrees, then piped to the laundry room where it is used in the washing machines.

In addition to the laundry air conditioning system, other Airtemp units are used in perishable food and meat storage rooms, ice cream freezers, pantry boxes, service counters, laboratory refrigerators and in several blood banks.



COOLING IS PROVIDED by two 75-hp radial compressors, with air being distributed to slotted-vane grilles through high-velocity ducts.

"This is wonderful stuff!"

This stuff, as the man calls it, is Permagum. It's the sealing compound which maintenance and service engineers prefer for sealing cases, inspection plates, pipe openings. They know this is the ideal way to stop customer dissatisfaction before it can start, because moist air permitted to seep into a cabinet can cause condensation as well as a host of untold complications.

This serviceman is using brown Permagum, which comes in 2½ lb. and 45 lb. slugs. This heavy-duty sealer will adhere to any dry surface and will never harden, staying plastic from 0° to 350°F. There is also gray-white Permagum, which comes in 80 ft. rolls of $\frac{3}{16}$" cords. It is odorless; it never hardens; it can be painted immediately. It is also ideal for sealing around wires, since it won't attack rubber insulation.

Your wholesaler stocks Permagum. Or write **VIRGINIA SMELTING Co., Dept. 64, West Norfolk, Va.**

VIRGINIA Refrigerants

ESOTOO • KINETIC CHEMICAL'S "FREON" REFRIGERANTS
V-METH-L • CAN-O-GAS • PERMAGUM • PRESSTITE TAPE
SOLVEX PRODUCTS • SUNISO REFRIGERATION OILS

Circle No. 33 on Reader Service Card

NEWS OF THE INDUSTRY

WESTINGHOUSE TO MAKE ROOM UNITS

Westinghouse Electric Corp. will re-enter the field of room air conditioning in 1954 with a completely new line of the small units, reports H. F. Hildreth, manager of refrigeration specialties for the company's Electric Appliance Div.

"After having been out of the room air conditioner business since 1942", Hildreth explains, "our company has repeatedly surveyed the field and will re-enter it in '54 with what we believe will be a line of room air conditioners equal to any on today's market."

The new line of Westinghouse room air conditioners will be shown to the company's major appliance distributors during the distributor convention in Mansfield, Ohio, this fall and will be available at the retail level early next year.

BUSH BUILDS NEW CALIFORNIA PLANT

Bush Mfg. Co. is erecting a new building in Riverside, Calif., which will be equipped to turn out air conditioning and commercial refrigeration products.

The new plant will contain 33,000 sq. ft. and is being built on a nine acre plot to allow for future expansion. Completion is scheduled for Dec. 1st.

Cecil Boling, president of Bush, disclosed that the project has been under consideration for a year. He said that having manufacturing facilities on the west coast will permit the company to speed delivery, reduce freight costs and offer better service to customers in that area.

$500,000 LOSS IN BAKER PLANT FIRE

FIREMEN FIGHT disastrous blaze at Baker plant.

* * *

An early morning fire at Baker Refrigeration Co.'s South Windham, Me., plant totally destroyed the 300 x 40' main building and a 100 x 40' brick ell. Although the larger brick building in which Baker does most of its manufacturing was saved by firemen from four neighboring communities, the loss was still estimated to be approximately $500,000.

According to Charles Knox, factory manager, the company took an inventory to determine what was left. He said that Baker was filling what orders it could until full production is again resumed. No estimate of what effect the fire may have had on production could yet be given, he said.

The fire destroyed virtually all the tools and dies used in the production of refrigeration units in addition to a supply of spare parts. Records and files, stored in the office on the second floor, were a total loss, according to general manager Paul H. Bluestein. An attempt is being made to "reconstruct them as best we can," he said.

Fred Weiland of Cincinnati, one of the owners of the firm, reported that the $500,000 loss was covered by insurance. The fire was discovered around 5 a.m. by a volunteer fireman living near the factory. The firemen answering the alarm found no night watchman on duty and were forced to break into the building to fight the blaze.

BEVCO JULY SALES SET NEW RECORD

Shipments of electric beverage coolers by Bevco Co., Inc., during July of this year were the largest for any single month in the company's history, Sam C. Dorman, president of the St. Louis company reports. Dorman says that several new models are now in various stages of production.

MUELLER ADDS TO K. C. AREA SPACE

Mueller Brass Co. has expanded its warehouse facilities in the Kansas City area with the addition of a new building. The structure, containing 10,500 sq. ft. of floor space, is located at 3215 31st St. It will house both sales offices and warehouse stocks. C. R. Black is district sales manager.

NOVEMBER SHOW TO BE A "SELLOUT"

That the 8th All-Industry Refrigeration & Air Conditioning Exposition will be the largest of its kind ever held is assured by the most recent report from Show Headquarters in Washington.

The Show will be held Nov. 9-12 in the Municipal Auditorium, Cleveland.

George Mills, Show Director, reports that 220 exhibitors have taken space, the same number as were in the 1951 Show in Chicago. This year's Show, however, will occupy 60,731 sq. ft. of floor area, as compared with 56,314 sq. ft. in the 1951 Show.

New exhibitors who have signed up since the last report include:

Continued on page 45

PACKAGE UNITS HIT TOP MARK IN 1952

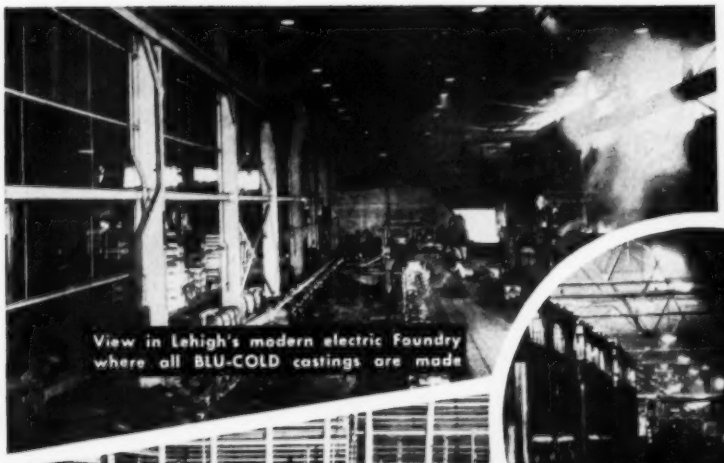
Shipments of components and accessories for air conditioning and refrigeration equipment in 1952 were valued at $213 million, according to figures compiled by the Bureau of the Census, Department of Commerce. (Detailed figures are presented in a table on page 47.)

The 1952 total equalled the all-time high established for industry shipments in 1951. Values are at manufacturers' prices.

Big gains in dollar volume were shown in 1952 in shipments of compressors, compressor units and self-contained air conditioning equipment. Declines were shown in shipments of condensing units, heat-exchange equipment and centrifugal systems.

Shipments of condensing

Continued on page 47



View in Lehigh's modern electric Foundry where all BLU-COLD castings are made

West wing of Machine Shop

Normalizing ovens in Electric Foundry

A corner of Metallurgical Laboratory

ALL BTU CAPACITIES DETERMINED BY ASRE STANDARDS

Lehigh BLU-COLD COMMERCIAL REFRIGERATION

Lehigh's Consistent Quality Starts With America's Finest Metal

Testing tensile and compression strengths of Lehigh castings

Lehigh enjoys many manufacturing advantages that go to produce quality. Probably the most important of these is the ownership of one of the largest and most modern ALL-ELECTRIC foundries in the country. In this foundry, Lehigh produces its own grey iron castings for BLU-COLD crankcases, cylinders, valve plates, cylinder heads, eccentrics, pistons and end plates.

This grey iron is a ***premium metal*** rated as the finest in America by users in many industrial fields. Its superiority comes from melting in electric furnaces which eliminate impurities and produce a uniform, close grained, nonporous metal which can be machined to tolerances of .0001 and will greatly outwear ordinary cast iron. All Lehigh castings are normalized (stress relieved), hardness controlled and checked critically at every point of production in Lehigh's metallurgical laboratories.

From this basic quality start, Lehigh units undergo a series of equally fine production processes to give you "America's Finest and Most Modern Condensing Units."

A Complete Line of Condensing Units 1/4 H.P. to 5 H.P. Units and Systems for Refrigerated Transportation. Automatic Defrost Systems. Bare Compressors for Replacement. Catalogs on Request.

Lehigh BLU-COLD 1 H.P. Heavy Duty Water Cooled Model WM10-F

Lehigh BLU-COLD

CONDENSING UNITS AND SYSTEMS

Lehigh Manufacturing Co., Lancaster, Pa.

DIVISION OF LEHIGH FOUNDRIES, INC.

Export Dept.
13 E. 40th St., N. Y.

Manufacturers of Malleable and Grey Iron Castings, Refrigerating Equipment, Air Valves, Automatic Vending Machines

Circle No. 87 on Reader Service Card

WESTINGHOUSE ADDS TO MOTOR FACILITIES

The Westinghouse Electric Corp. plant at Attica, N. Y., which has been building industrial stokers, will become a branch plant of the Motor and Control Div. whose main plant is in Buffalo.

Tom Turner, vice president in charge of the Motor and Control Div., said the Attica plant will produce parts for electric motors and some other parts. The present management staff at Attica will remain in charge of operations.

MOTOR CONFERENCE SET FOR OCT. 6-8

The Fort Wayne section of the American Institute of Electrical Engineers is sponsoring a conference on the application of electric motors to the air moving industry on Oct. 6, 7, and 8. The conference will be held in conjunction with a symposium on induction motors, both of which will meet in the Hotel Van Orman in Fort Wayne.

The conference, designed to further cooperation between manufacturers of air handling equipment and motor manufacturers, is scheduled to convene in the afternoon of Oct. 6 and to be completed Oct. 7, with the induction motor symposium following on the 8th.

The scheduled list of subjects and speakers for the conference on the Application of Motors to Air Moving Equipment include: Automatic Temperature Control of Heating, Ventilating and Air Conditioning Air Handling Systems, by G. V. Steffens, district manager, Minneapolis-Honeywell Regulator Co.; The Application of Shaded Pole Motors to Room Air Conditioners, by R. W. Morgan, chief engineer, Fedders-Quigan Corp.; Desert Coolers and the Motors Used Thereon, by R. J. Petersen, chief engineer, Utility Appliance; Requirements of Air Conditioning Fan Motors, by M. D. Irwin, product engineer, Carrier Corp.; and Room Air Conditioners, by W. P. King, engineer, Servel, Inc.

PENN PARLEY DRAWS FIELD MEN FROM COAST TO COAST

District managers, sales engineers, and representatives from Penn Controls Co. sales offices throughout the United States and Canada attended the company's 5-day sales conference.

* * *

The entire sales organization of Penn Controls, Inc., recently attended a week-long conference held at the main office and factory in Goshen, Ind.

District managers, sales engineers and representatives from sales offices through the United States and Canada, as well as company officials and department heads, took part in the conference. The five day meeting stressed increased customer service, new products and product information and new market developments and potentials.

Guest speakers, representing some of the major industries served by the company, outlined industry problems and trends.

R. H. Luscombe, general sales manager, served as master of ceremonies throughout the conference, assisted by division sales managers, K. W. Cash and R. V. Clark. Albert Penn, president, addressed the opening session and R. S. Penn, executive vice president and E. B. Maire, vice president and director of sales, conducted special sections of the program devoted to new markets and development of new products.

10 NEW MEMBERS JOIN ARI RANKS

Addition of 10 new members has recently been announced by the Air-Conditioning and Refrigeration Institute. The new ARI members include:

Admiral Corp., Chicago; Coleman Co., Inc., Wichita, Kan.; Deering Air Conditioning Co., Inc., Cincinnati; Freshn'd Air Co., Div. of Cory Corp., Chicago; Friedrich Refrigerators, Inc., San Antonio, Tex.; General Chemical Div., Allied Chemicals & Dye Corp., New York City; Norge Div., Borg-Warner Corp., Chicago; O. A. Sutton Corp., Wichita, Kan.; Tele-King Corp., New York City; and Viking Air Conditioning Corp., Cleveland.

SELLOUT SHOW . . .

Continued from page 43

Drayer-Hanson, Inc.; Flexible Tubing Corp.; Deering Air Conditioning Co.; Better-Bilt Mfg. Co.; American Emblem Co.; Inc.; Barr Mfg. Co.; Rite Cold Products Co.; Automatic Machine Products Co.; Torrington Mfg. Co.; Liquid Freeze Corp.; Morrison Products Co.; and Reading Tube Corp.

Exhibits will be the most complete of any Show of this type. Included will be all kinds of air conditioning equipment, from window coolers to year-round home units; refrigerated cases and fixtures, both normal and low temperature; water coolers, milk coolers, ice cube makers, etc.; insulation, cold storage doors, condensing units, motors, blowers, coils, and all the hundreds of accessory items that go into the modern refrigeration and air conditioning system.

Scores of new products will be introduced for the first time at the Show. Educational exhibits will include a special display of automobile air conditioning.

Industry associations which have scheduled meetings during the Show period include Refrigeration & Air Conditioning Contractors Association; National Commercial Refrigeration Sales Association; Refrigeration Service Engineers Society; and Refrigeration Equipment Wholesalers Association.

Hotel reservations are being handled through the Cleveland Convention Bureau, Terminal Tower, Cleveland, Ohio.

U. S. RADIATOR CORP. ABSORBS COAST FIRM

More than 99% of the outstanding stock of Drayer-Hanson, Inc., Los Angeles, has been deposited for transfer into United States Radiator Corp. common stock, it was announced recently by W. C. McCord, president of U. S. Radiator Corp.

McCord said that an aggressive program is planned for increasing sales of Drayer-Hanson air conditioning equipment both through U.S. Radiator branches and Drayer-Hanson agencies. This will include not only commercial and residential installations, but industrial applications as well.

U. S. Radiator salesmen previewed the Drayer-Hanson line at recent meetings in Chicago and New York.

CAVALIER CHANGES NAME TO FORSTON

The company name of Cavalier Air Conditioning Co., Houston, Tex., has been changed, effective Oct. 1, to The Forston Co. The firm's trade name "Cavalier" has also been changed, the new trade name is 'Forston.'

Ownership and officers of the firm remain unchanged.

Circle No. 36 on Reader Service Card

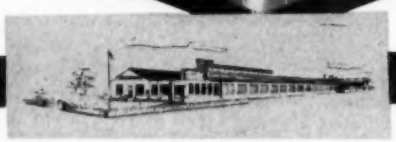
NOW... INTRODUCING NEW UNIFLOW **ALL-ALUMINUM**

WALK-IN COOLERS *and* WALK-IN FREEZERS

UNIFLOW FEATURES

- ★ Heavy gauge tempered aluminum—inside and out.
- ★ Semi-rigid fiberglas sealed to lining. Highest insulating value.
- ★ Rounded corners offer extra beauty and streamlined appearance.
- ★ Concealed door hinges.
- ★ Standard size sections may be added any time.
- ★ Tie-rod construction throughout; no cover plates to mar interior beauty.

Write for full information on the most complete line of walk-in coolers/freezers in the industry. We will be pleased to send you our Dealer "Extra Profits" Brochure. Address your request to THOMAS A. MARTIN, *Sales Manager.*



UNIFLOW MANUFACTURING COMPANY

EAST LAKE ROAD, ERIE, PENNSYLVANIA

BIG BUYS

IN SMALL PRECISION

FLOAT CONTROL VALVES

For controlling water in humidifying units, pan fillers, air conditioning equipment, evaporative coolers, and air washers. No. 51 and 52 Valves accurately maintain water lines as low as 1" deep. Float adjustable. See your jobber or write us.

No. 51

Only 5¾" long overall. Non-corrosive metals throughout. Easy to install by drilling one hole. Capacity ½ gal. per minute at 50 lbs. pressure.

No. 52

8" long overall. Same features as No. 51 Valve, except larger capacity—1 gal. per minute at 50 lbs. pressure.

QUICK HOOK-UP SADDLE VALVE

Fits ½" and ¾" pipe. To install, just drill ¼" hole in pipe. Outlet provided for ¼" O.D. copper tubing.

HANDY NEEDLE VALVE

Ideal to control water supply to humidifiers and water valves. ¼" I.P. male end and ¼" O.D. copper tube size outlet.

See your jobber or write

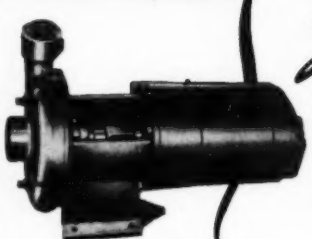
MAID-O'-MIST, Inc.

3217 NORTH PULASKI ROAD, CHICAGO 41, ILLINOIS

MAID-O-MIST Inc. HEATING SPECIALTIES

Circle No. 88 on Reader Service Card

For AIR CONDITIONING and Hot Water Circulating



Jacuzzi

GENERAL PURPOSE

CENTRIFUGAL PUMPS

Low cost utility pumps built for air-conditioning systems, food processing plants, circulating water for cooling towers, for sprinkling lawns, for swimming pools and hot water circulating. Choose capacity and horsepower (¼ thru 5) suited to your needs. Write for Bulletin JGP-2.

Since 1915—the industry's most complete line of pumps and water systems ...originator of jet pumps.

ALSO: ST. LOUIS 23, MISSOURI
BINGHAMTON, NEW YORK
PORTLAND 14, OREGON
MONTERREY, MEXICO

JACUZZI BROS. INC.

RICHMOND, CALIFORNIA

Circle No. 37 on Reader Service Card

AIR-CONDITIONING EQUIPMENT AND COMPONENTS AND ACCESSORIES FOR AIR-CONDITIONING AND REFRIGERATION EQUIPMENT: QUANTITY AND VALUE OF SHIPMENTS, BY CLASS OF PRODUCT, 1948-1952

(Value figures in thousands of dollars)

Class of product	1952		1951*		1950		1949		1948	
	Number	Value	Number	Value	Number	Value	Number	Value	Number	Value
Condensing units, total	698,473	$64,834	840,176	$75,672	885,913	$75,833	610,341	$53,534	841,609	$73,443
Ammonia refrigerants	209	300	240	404	245	352	254	346	1,129	1,799
Refrigerants (except ammonia), total	698,264	64,534	839,936	75,268	885,668	75,481	610,087	53,188	840,480	71,644
Air-cooled	659,441	50,541	796,303	58,624	835,239	59,035	570,280	40,127	797,098	56,829
Water-cooled	38,823	13,993	43,633	16,644	50,429	16,446	39,807	13,061	43,382	14,815
Compressors and compressor units, total	1,677,300	71,047	1,051,937	56,669	954,368	46,977	604,431	29,929	459,390	33,493
Ammonia refrigerants	1,825	4,708	2,401	6,465	2,652	6,756	2,240	5,620	4,156	9,209
Refrigerants (except ammonia)	1,675,475	66,339	1,049,536	50,204	951,716	40,221	602,191	24,309	455,234	24,284
Heat-exchanger equipm't, total	....	63,456	....	*64,935	....	61,337	....	40,925	....	48,552
Evaporative condensers	4,912	7,326	6,216	8,652	7,818	8,869	4,798	5,850	5,560	7,505
Air-conditioning units (not self-contained)[1]	43,492	14,534	33,263	14,636	29,704	11,671	30,044	7,997	21,633	8,276
Unit coolers, refrigeration	76,703	11,492	88,718	12,660	103,596	12,917	65,806	7,710	81,192	9,598
Other heat-exchanger equipment[1]	....	30,104	....	*28,987	....	27,880	....	19,368	....	23,173
Self-contained air-conditioning units, total[2]	424,105	133,101	282,488	93,573	257,263	86,913	123,709	50,584	111,620	49,008
Window-sill type	357,106	67,271	228,964	42,442	187,224	31,373	78,454	14,425	(d)	(d)
Other than window-sill type[2]	66,999	65,830	53,524	51,131	70,039	55,540	45,255	36,159	(d)	(d)
Other air-conditioning and refrigeration equipment, total	....	40,668	....	36,537	....	n.a.	....	n.a.	....	n.a.
Centrifugal refrigeration systems	363	14,040	441	15,300	382	12,249	285	8,189	361	10,351
Ice-making machines	26,693	12,838	12,998	8,804	14,914	8,907	6,902	4,641	5,947	5,266
Year-round air-conditioning units (self-contained, except heat pumps)	10,473	6,876	7,728	5,863	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Mechanical dehumidifiers, refrigeration type	72,017	5,201	75,659	4,731	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Absorption and adsorption systems and equipment	119	1,713	138	1,839	(d)	(d)	(d)	(d)	(d)	(d)

*Revised.

n.a. Not available.

[d]Withheld to avoid disclosing figures of individual companies.

[1]Represents unit coolers, air-conditioning, for 1951 and earlier years. Also, data for surface dehumidifiers which for 1951 and earlier years were included with "Unit coolers, air-conditioning" are included in "Other heat-exchanger equipment" for 1952. Separate data for surface dehumidifiers are not available prior to 1952.

[2]For 1951 and earlier years, includes data for self-contained air-conditioning units designed especially for use in year-round air-conditioning systems. For 1952, data for these units are included under "Year-round air-conditioners (self-contained, except heat pumps)."

PACKAGED UNITS . . .

Continued from page 43

units in 1952 totaled 698,473, valued at $64,834,000, as compared with 840,176 units valued at $75,672,000 in 1951, or a 17% drop in unit volume. Declines were shown generally among the open type units and the smaller hermetic units. The larger size hermetics showed small gains over 1951.

A total of 1,677,300 compressors and compressor units valued at $71,047,000 was shipped in 1952. This is an increase of 59% in number and 25% in value compared with 1951. The gain for compressors using refrigerants other than ammonia actually was higher than this, since ammonia compressor shipments dropped 25% from 1951 totals.

Value of heat-exchanger equipment shipped in 1952 amounted to $63,456,000, slightly under the $64,935,000 reported in 1951. Shipments of centrifugal refrigeration systems, at $14,040,000, was down $1.3 million from 1951.

Shipments of self-contained air conditioning units totaled 424,105 valued at $133,101,000. This was a gain of 50% in unit volume and 42% in dollar value over 1951 totals.

Window-type unit shipments totaled 357,106 in 1952, against 228,964 in 1951. Units of other than window type numbered 66,999, against 53,524 in 1951.

PRICE OF AIRTEMP UNITS UPPED 5%

Factory prices of Chrysler Airtemp's "packaged" air conditioners have been increased approximately 5% effective Sept. 1, J. F. Knoff, vice president and general sales manager, has announced.

Knoff also reported that prices of all Airtemp's heating products have been increased 7½% at the same time.

Continued from page 38

tion facilities have been built into the food preparation area, making up an unusually neat, efficient step-saving installation.

For example, large refrigerated compartments have been built into stainless steel cabinets, the tops of which comprise cutting boards. One of these refrigerators is used for storing salads, keeping fresh fruits and vegetables crisp and just right for eating at all times.

In addition, there are three more large under-the-counter type refrigeration compartments located about the area. All are of the built-in type and the counter tops provide plenty of work space. Also, there is a large refrigerated table in the center of the area, which is used to keep salads and desserts chilled and ready to serve.

Six compact hermetic compressors are employed to cool the fountain, two refrigerated display cases, the salad refrigerator, three all-purpose refrigeration compartments and the refrigerated table. Five of these units are of ½-hp capacity; the sixth is a ⅓-hp unit. These compressors were installed under counters and in other out-of-the-way spots.

In addition to the modern refrigeration equipment in the front service section of the drive-in is an impressive array of food cooking and preparation equipment. Included are three griddles, four bun toasters, two bread toasters, three malt-mixing machines, a fry station, four counter-type fryer units, steam tables, coffee cup warmer, five coffee urns, and a multitude of smaller equipment necessary to the efficient operation of such an establishment.

Advance Planning Pays

The main kitchen and bake shop housed in the stone annex in the rear of the front service section of the drive-in is another example of careful advanced planning. It is interesting to note that extra-large reach-in refrigerators have been substituted for walk-in cooling facilities. Two 62-cu.ft. refrigerators afford ample storage space in this part of the main kitchen.

The two refrigerators have been installed back-to-back, forming an island in the food preparation section. Two griddles, a sectional range, two fryers, a refrigerated table, pot sink, steak machine, meat shaping machine, food chopper, slicer, and work tables form a rectangular enclosure about the two refrigerators.

Reach-Ins Offer Flexibility

A single 62-cu.ft. reach-in is used for storage and cooling in the bake shop, another important department of the main kitchen, adjacent to the preparation section. The bakery is complete with a large bake oven, 60-quart mixer, baker's table, bun box rack and other necessary equipment.

These reach-in refrigerators all are self-contained. They were installed instead of the customary walk-in facilities because they offer a more flexible arrangement.

Location of any of the three units can be changed whenever the needs of the food service operation might

HOT OR COLD

CONDENSATE DISPOSAL UNIT

This completely automatic foolproof unit removes hot or cold condensate fluids from the receiver tank and pumps it to an outside drain. Designed for simple installation in air conditioning units, the Eastern Condensate Disposal Unit offers low operating cost with fully automatic control and quiet, reliable operation. *Free specification sheet CD-10 on request.*

Eastern
INDUSTRIES, INC.
296 ELM ST., NEW HAVEN, CONN.

Circle No. 39 on Reader Service Card

require it. In addition, by having the refrigerators in three spots instead of one, literally thousands of steps are saved each day, speeding up the food preparation and serving operation, and increasing the efficiency of the personnel.

The dishwashing department is conveniently located near the walkway leading from the octagon-shaped front service station. Here an automatic conveyor-type dishwasher has been installed, along with work tables and a heavy-duty garbage disposal unit. A vegetable preparation section is complete with work tables, heavy-duty potato peeler, and sink.

Another carhop service station is located at the rear of the main kitchen. It is designed about the same as the one at the front, having a similar refrigerated fountain arrangement. Here, however, two self-contained ice cream cabinets provide more than 16 cu.ft. of frozen storage space. A large bulk ice-cube maker is located nearby.

Modern offices and large general storage facilities are also housed in this part of the building.

"JUKE-BOX" VENDOR

TALKING DOG stories have nothing on this Video Vendor refrigerated vending machine which speaks or sings anything from a sales message to a symphony. In addition, the completely automatic machine, developed by Barth Engineering & Mfg. Co., will dispense ice cream, frozen foods, dairy products, or anything else requiring temperature control. Up to six varieties of products can be handled and samples are displayed in the front portion of the unit. An electronic recorder permits the unit to speak or play music.

REFRIGERATED REEFER HOLDS PRODUCE AT —10F

A shipment of 126,000 lbs. of strawberries, valued at $28,500, was recently shipped from California to Jersey City in a new tye refrigerated railroad car. The produce, on route for 14 days elapsed time, was kept frozen and safe at —10 F without the usual salt-and-ice treatment every 24 hours by means of a mechanical refrigeration system developed by Trane Co.

The system is a self-powered, diesel-driven unit that is completely self-contained. It takes up less space than ice bunkers in the railroad cars and eliminates corrosion damage to running gears that occurs with brine drippage. Cars can be side tracked indefinitely without the previously required re-icing.

Developed in conjunction with the Santa Fe Railroad, the refrigerated cars have been tested extensively during the past five years. According to the firm, in the hundreds of shipments no cargo has been lost by spoilage from failure of the refrigeration system.

VIBRA-SORBERS are available in bronze with copper tube ends in sizes from ⅛" through 4" I.D. Also available in steel in sizes from 5" through 12" I.D.

Write for descriptive literature giving full specifications and installation and application data on Flexon VIBRA-SORBERS. There is no obligation.

In refrigerating or air conditioning systems, you can keep the damaging effects of the vibration out of rigid piping with FLEXON VIBRA-SORBERS. These scientifically designed units have the proper amount of flexibility to harmlessly dissipate the vibration. Important, too, particularly in air conditioning systems, is the VIBRA-SORBER'S ability to isolate noise and prevent its transmission throughout a building.

Whenever you have a vibration problem, consider a VIBRA-SORBER first. They are economical, dependable and as easy to install as a section of pipe or tubing.

Flexon identifies CMH products that have served industry for over 50 years.

CHICAGO METAL HOSE Division

Flexonics *Corporation*

1321 S. Third Avenue • Maywood, Illinois

Manufacturers of flexible metal hose and conduit, expansion joints, metallic bellows and assemblies of these components. In Canada: Flexonics Corporation of Canada, Ltd., Brampton, Ontario

Circle No. 31 on Reader Service Card

COMMERCIAL Refrigerator SALES NEWS

Panel to Discuss Food Store Planning at NCRSA Convention

A PANEL session on food store planning, installation and service and refrigeration engineering will be one of the highlights of the seventh annual convention of the National Commercial Refrigerator Sales Association, to be held Nov. 9 and 10 at the Statler Hotel, Cleveland.

Members of the panel will be: Milton Katz, Ever-Ready Refrigeration Co., Trenton, N. J.; E. L. Hayes, Detroiter Refrigerator Mfg. Co., Detroit; George Schoenbacher, Red-E-Cold Refrigerator Co., Chicago; and Sherman Bushnell, Refrigeration Engineering Co., Seattle.

The panel will discuss such problems as design and layout, shelving and gondolas, color schemes, cartage, delivery and installation, servicing, applied refrigeration, etc., and will answer questions from the floor.

Irving W. Shell, NCRSA president, will preside as moderator.

Another interesting feature of the NCRSA convention will be a presentations of slide films showing various phases of the operations of a number of member companies. These will include pictures of display rooms, warehouses, service departments, engineering departments, trucking facilities, etc.

Speakers at the convention's opening session Nov. 9 will include W. B. McMillan, president of Hussmann Refrigerator Co., and George S. Jones, Jr., managing director of the Air-conditioning and Refrigeration Institute.

McMillan will speak on "The Importance of the Distributor to the Future of Our Industry", and Jones will outline "The Expanding Opportunities in the Refrigeration Field."

Annual reception and dinner for NCRSA members and their wives will be held at 6 p.m. on Nov. 9 in the Euclid Ballroom of the Statler.

NCRSA FIRMS REPORT GAIN IN SALES FOR 6 MONTHS

Sales increases averaging 18.16% were reported by members of National Commercial Refrigerator Sales Association covered in a recent survey by NCRSA headquarters. The increase is over sales in the same period of last year.

For the second quarter of this year, NCRSA members reporting showed an increase of 12.72% over the corresponding 1952 period.

Net profit of reporting firms for the first six months of 1953 was 1.58% higher than for the same period of last year. Inventory as of June 30, 1953 was down .88% from the same period of 1952. Accounts receivable as of June 30 of this year showed an increase of 2.23% over those for the same period a year ago.

For the six-month period, 67% of members reporting showed an increase in sales over the first half

SMALL FOOD MARKET GETS FACE LIFTED

BEFORE

Typical example of the dingy, ill-lighted, and unkempt interiors which gave a "workshop" atmosphere to food stores of the past is this "before remodeling" photograph of a corner grocery in a small Ohio town. Now look at the picture below. In which of these two stores would you rather do your shopping?

AFTER

Completely remodeled, this same little food market now presents an entirely different appearance, with the well-lighted displays and spotless appearance that today's grocery shoppers demand. Here's pictorial proof of how much the commercial refrigeration dealer can do to help food store customers.

of 1952, and the same percentage did more business in the second quarter of 1953 than for the same period in 1952, while 60% of these reported an increase in net profit.

Nearly 10% of the distributors who reported increased sales also indicated a decrease in accounts receivable, NCRSA headquarters reports.

1952 BUSINESS COSTS SURVEYED BY NCRSA

The National Commercial Refrigerator Sales Association has released its annual overhead expense report on the cost of doing business during 1952.

The average percentage of profit reported by those participating was 3.47, as compared to 3.03 for 1951.

The report gives a breakdown of costs on a percentage basis for all items of expense for each individual distributor reporting, and indicates the volume classification and the character of business of each firm.

Copies are available at NCRSA headquarters, 1900 Arch St., Philadelphia 3, Pa.

SURVEY SHOWS SWITCH TO SELF-SERVE MEATS

A rapid switch to self-service methods of retailing meats is observed among members of the National Association of Retail Grocers, with slightly more than half (50.3%) of NARGUS members reporting they have converted at least partially to self-service in their meat departments. The survey of members' meat department operations was published in the August issue of the *NARGUS Bulletin*, the association's official publication.

"The greatest change in meat retailing methods since the introduction of refrigeration is beginning to snowball," the Bulletin reported. "Now that cellophane is back on the market in plentiful supply, association members are setting the pace in a rush to self-service methods."

A percentage breakdown of the meat retailing operations of NARGUS members showed: 12.5% have meat departments that are completely self-service; 37.8% have meat departments that are semi-self-service; 49.7% have meat departments that are operated on a service basis.

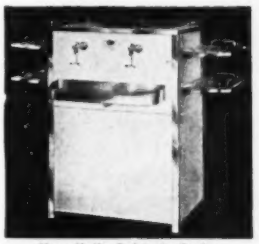
The high percentage of interest in self-service, the survey pointed out, is attributed to the fact that practically all of the independent super markets in the nation are members of NARGUS, or 13,948 to be exact. In addition, there are 38,716 members classified as "superettes" who do up to $250,000 volume, and know the only way a meat department can operate efficiently today is to build volume and spread costs.

"Since volume is of no value unless it can be handled efficiently, here is where self-service comes in," the Bulletin stated, "for it enables the store to handle increased traffic or intermittent flows of traffic with equal ease."

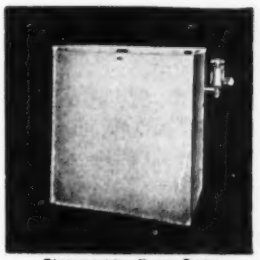
The survey determined that association members use an average of 28 linear feet of meat display case per store. By method of merchandising, the breakdown is as follows:

For Recognized Quality - Extra Gallons

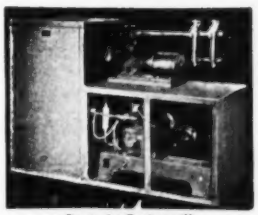
Sell Your Condensing Unit - Filtrine Water Coolers



Mess Hall—Cafeteria Cooler



Photographic—X-ray Cooler



Typical "Packaged" Circulating Chilled Water System

Promote your own condensing unit sales with Filtrine's 20-year-life construction...high capacity . . . Super Storage . . . more than 40 years' dependability.

COOLERS FOR MESS HALLS — CAFETERIAS

Conform with Fed. Spec. 00-C-566b

COOLERS FOR X-RAY & PHOTOGRAPHY

PACKAGED CIRCULATING CHILLED WATER SYSTEMS

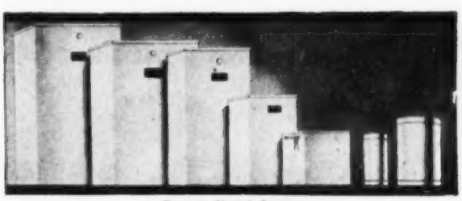
REMOTE COOLERS FOR ALL USES

Taste-Master

Sell your condensing unit with Filtrine Stainless Steel or Duco finished cabinets, equipped to suit with top/side shelves, bubblers, glass-fillers. Can be Taste-Master equipped to remove chlorine, rust, sediment from water.

Sell your condensing unit with Filtrine models repeatedly named by V.A., Signal Corps, Air Force, etc. for X-ray, and photo-labs. Under counter design and floor-mounted models with stainless steel work-table top. Filters (extra) to prevent scratched and pin-holed negatives.

Sell your condensing unit! Systems for drinking or processing water—completely packaged with pump, controls, your condensing unit factory installed. Capacities 5—400 g.p.h.; storage 5—150 gals. Filters and Rectifier-Dechlorinators (extra) to insure taste-free, sparkling water.



Remote Model Coolers

Sell your condensing unit with remote models for new and replacement jobs—all applications. Capacities 10—1000 g.p.h.; storage 7—300 gals. Filters, Rectifier-Dechlorinators available for all sizes.

Filtrine HIGH EFFICIENCY

Write for Catalog and Specification Guide

FILTRINE MANUFACTURING COMPANY • BROOKLYN 5 • N. Y.

"Water Coolers and Filters for 40 Years"

Circle No. 43 on Reader Service Card

self-service departments average 57 feet of case; semi-self-service departments average 37 feet of case; service departments average 14.5 feet of case. Semi-self-service departments averaged 18.5 feet of self-service case and 18.4 feet of service case.

The cross-section survey of the independent retail grocers revealed that self-service is growing in popularity in communities of all sizes, but receives most encouragement in larger towns and cities. Retailers in congested areas on land of high valuation need increased volume for efficient operations which must be handled within limited floor space.

According to the survey, members have been most aggressive in converting to self-service meats in areas where meat sales are largest on the basis of population distribution.

In communities with a population of over 100,000, methods of merchandising were as follows: self-service, 47.2%; semi-self-service, 30.2%; service, 24.9%. Where the population is 10,000 to 100,000, meat operations were 38.9% self-service; 37.7% semi-self-service; and 34% service. In communities under 10,000 population, methods were 13.9% self-service; 32.1% semi-self-service; and 41.1% service.

It was further revealed in the NARGUS survey that meat departments are doing a larger share of the store's dollar volume when operated on a self-service or even a semi-self-service basis. Although, the study pointed out, the "share of dollar volume" is rapidly losing ground as a method of measuring meat department performance.

"The best criterion of a meat department's performance is tonnage handled," the Bulletin declared. "The meat manager's goals are then set in terms of per capita consumption rather than dollar sales."

The survey further determined that self-service departments have fewer square feet of cooler space for every linear foot of display case than do service departments. The cooler case ratio was studied for stores in communities of different sizes and the conclusion is that size of the community has a definite bearing on the amount of cooler space needed for each linear foot of display case.

DOES CHANGING THE VALVE REALLY CURE THE TROUBLE?

As you know, changing an expansion valve may remedy a lot of trouble in a refrigeration system. But does it really cure it?

The fellows at the factory will tell you that a large percentage of returned valves are OK. This indicates that *most troubles* occurring at the valve may be *caused by the stuff passing through it.* It's possible that a poor oil in the system is sludging or "waxing" and clogging the valve, or that excessive moisture is freezing out in it. By changing a valve, you often remedy the trouble, the system starts up and you get refrigeration. But the *cause* still remains and sooner or later the trouble returns. Be sure that poor oil is not causing the trouble—change to Suniso—the best in refrigeration oils.

Sold by Leading Wholesalers Everywhere

SUNISO ADVANTAGES • provides adequate lubrication at all temperatures encountered in service • possesses a high degree of stability • won't throw out wax deposits under low-temperature conditions • has extremely low moisture content • resists formation of corrosive acids and carbon under service conditions • separates readily from refrigerant—won't react adversely

SUNISO
REFRIGERATION OIL
A PRODUCT OF SUN OIL COMPANY

Circle No. 71 on Reader Service Card

START JORDON PLANT

A MILLION-DOLLAR PLANT for Jordon Refrigerator Co. was begun by (left to right): Frank Fogel, Jordon president; Lee Harris, vice president, Chamber of Commerce of Greater Philadelphia; and Harry Fogel, Jordon vice president, who turned the first spadeful of earth at groundbreaking ceremonies in northeast Philadelphia. Completion of the one-story, 150,000 sq.ft. building is scheduled for early next year.

Ray Kromer to Outline Membership Drive During RACCA Convention

A diversified program designed to appeal to all interests of air conditioning and refrigeration contractors has been mapped for this year's annual convention of the Refrigeration & Air Conditioning Contractors Association, to be held Nov. 8, 9 and 10 in the Carter, Hotel, Cleveland.

The meeting has been timed to coincide with the 8th All-Industry Refrigeration and Air Conditioning Exposition in the Cleveland Municipal Auditorium Nov. 9-12.

The RACCA general meeting will be held on Monday, Nov. 9, with the morning program being held in the Petite Cafe and the afternoon program in the Carter Ballroom. All contractors, whether or not they are RACCA members, are welcome.

Vadakin to M.C. Program

Ed Vadakin, of Vadakin Refrigeration Co., president of the Cleveland RACCA organization, will be master of ceremonies for the general meeting.

The opening speaker, Russell Metzner, vice president of Central National Bank of Cleveland, will outline "General Economic Conditions With Regard to Refrigeration and Air Conditioning".

Following Metzner on the morning program, Don Petrone, vice president of Typhoon Air Conditioning Co., will discuss "Selling Air Conditioning for Profit".

Luncheon will follow in the Embassy Room of the Carter for RACCA members and guests.

Speakers at the afternoon session include Col. Jack Major, humorist; W. J. Stelpflug, vice president of Hussmann Refrigeration, on "Refrigeration — Food and Design Problems"; and Irving B. Hexter, publisher of COMMERCIAL REFRIGERATION & AIR CONDITIONING.

A cocktail party at 6:30 in the Petite Cafe, with the Cleveland RACCA group as host, will close the day's program.

National directors of RACCA will hold their annual sessions on the morning and afternoon of Sunday, Nov. 8, in the Aviation Room of the Carter, beginning at 9:30 a. m.

Closed RACCA membership meeting and election of officers, with an open forum discussion of various association matters, will open at 9:30 a.m. on Tuesday, Nov. 10, in the El Rancho Room of the Carter.

At the afternoon session, beginning at 1 p. m. Ray Kromer, RACCA's new executive vice president, will outline the association's program for the coming year. This will include an expanded membership drive and other activities at both national and local levels designed to greatly increase the value of RACCA affiliation to both present and prospective members all over the country.

Ernest W. Farr, of Bell Refrigeration Corp., Lakewood, is chairman of the program committee for the November meeting.

WESTINGHOUSE COOLS ARABIAN NIGHTS & DAYS

Royal and government quarters in Riyadh, capital of Saudi Arabia, are having air conditioning equipment installed which is valued at $150,000, according to a report from Westinghouse Electric International Co.

A central-type Westinghouse air conditioning system with a capacity of 120 tons will condition the air in 29 guest rooms, one large dining hall and a reception room in Badia Palace, the home of Crown Prince Saud.

A similar system is being installed in Murrabah Palace the home of Prince Talal, which will serve five guest apartments in addition to the palace.

Installations in five new houses and one office wing are also being made for Shiek Suliman, Minister

of Finance for Saudi Arabia. Forced air circulation type equipment is being installed in these houses. Capacities range from 15 to 30 tons for this equipment which features dual refrigerant cycles and hermetically sealed compressors. Hermetically sealed compressors are especially adapted for service in Arabia where severe dust storms are experienced.

All equipment for these installations were manufactured at Westinghouse's Air Conditioning Div. in Hyde Park, Mass.

TRIAL OFFER HELPS ROOM COOLER SALES

Trial installation of room air conditioners by Talectro Ltda., Remington distributor in Barranquilla, Colombia, S. A., has proved successful in introducing the benefits of air conditioning in an area where its benefits are relatively unknown.

According to Carlos Mercado, Remington export manager, Talectro approached doctors, lawyers, business executives, government officials and other prominent professional people, and offered to install a window air conditioner in their homes or offices on a 60-day trial basis, without cost or obligation.

All 15 units installed as a result of the offer were purchased at the end of the trial period, Mercado says, and one customer ordered seven more. In addition to these immediate sales, the trial-offer technique built up a "user" list valuable in using as a reference on future prospective buyers.

MARSH
Electrimatic
You'll like it more than ever!
These Marsh-Electrimatic water regulators have been at the top for a long time . . . but today, thanks to endless improvements and refinements, you'll like them more than ever. Three of many outstanding features are pointed out here:
Manual flushing feature assures dependable service. Simply insert screwdriver as shown to open valve and flush out all dirt and grit from the line.
Two-ply bellows means more than double life. One-ply bellows must be made heavier; therefore break down under flexing fatigue. That's why this double-ply has more than twice the life of single-ply by actual test.
Boot eliminates packing — friction. Breakdown test shows this Neoprene boot stands up ten times as long as the best metal bellows!
These are just three of many features—typical of plus values found in the entire Marsh-Electrimatic line. Write us or see your wholesaler.
MARSH INSTRUMENT CO. Sales affiliate of Jas. P. Marsh Corp.
DEPT. P, SKOKIE, ILL.
MARSH-Electrimatic
Circle No. 49 on Reader Service Card

WALK-IN COOLER GUARD NEW POLIO VACCINES

Two 6 x 6′ standard walk-in refrigerated rooms manufactured by Bally Case & Cooler Co. play vital roles in the fight against polio carried on in the Poliomyelitis Research Center at Johns Hopkins University and Hospital in Baltimore, Md.

In its experimentation with new polio vaccines, Johns Hopkins employs the coolers to maintain the temperature of vaccines undergoing research. The vaccine samples under development and study are preserved in the refrigerated rooms at 37½ C. The temperature must be held constant within plus or minus 1° C.

Both walk-ins were installed by J. P. Pfeiffer & Son, Inc., of Baltimore.

CARRIER UNITS FEATURED IN NEW HOUSING PROJECT

The first of twenty planned houses featuring Carrier Corp.'s "Weathermaker" year-round air conditioning system has been opened in Westport, Conn. Priced in the $27,000 class, these homes are on a lot with a minimum of 1 acre.

These homes were designed for families needing four bedrooms and three baths. Sufficient space and headroom is available on the top floor for an additional bedroom and bath. Other features include Douglas Fir framing, oak flooring, custom designed kitchen cabinets, a G-E remote control electrical system, floor-to-ceiling picture windows and other equipment.

Builders of the home are Eleanor Redman and Norman Shapiro.

SAVE MAN HOURS USE MIRACLE ANCHOR METHOD

Ford Motor Corporation, Dynamometer Building, Dearborn, Michigan: Application of Rock Wool Batts by use of Miracle Anchors, bonded with Miracle Adhesive.

To attach insulation to ceilings and walls use Miracle Anchors and Adhesives. Eliminates drilling or welding.

FREE: Send for colorful informative brochure on Miracle Anchors, which details savings in man hours and costs by use of the Miracle Anchor Method.

MIRACLE ADHESIVES CORPORATION
214 EAST 53RD STREET, NEW YORK 22, N. Y.
and all Principal Cities and Canada

Circle No. 34 on Reader Service Card

Residential AIR CONDITIONING *Without Water!*

UNICON
by KRAMER

A Remote Type Air-Cooled Condenser that completely eliminates water, sewerage and plumbing problems.

SPECIFICALLY DESIGNED FOR RESIDENTIAL APPLICATION

Unusually Quiet!

WRITE FOR BULLETIN No. U 250

KRAMER TRENTON CO.
Trenton 5, N.J.

Circle No. 38 on Reader Service Card

PACKAGED UNITS COOL DETROIT SUPERMARKETS

Forty-five Chrysler Airtemp packaged air conditioners, with a combined cooling capacity of about 600 tons, have been installed in the 26 Detroit stores of the Big Bear supermarket chain. The complete air conditioning program was engineered and installed by the Jentzen-Miller Co.

Four additional stores, now under construction, are being equipped with multi-horsepower central-station air conditioners. Six more stores, still in the planning stages, will include this type of installation.

In about a year from now, according to Sol G. Shaye, Big Bear president, the chain will have 36 air conditioned markets in the area. "And," Shaye said, "housewives have told us that they find shopping a pleasure. Also, employees enjoy ideal working conditions," he declared.

Air conditioning, Shaye finds, has proven a profitable investment. Increased store traffic and larger individual purchases have softened the usual drop in summer business blamed on summer appetites and vacationing families.

"Next to her home, the average housewife probably spends more time shopping in stores than anywhere else. So we have tried, within the limits of good business, to make her shopping atmosphere as pleasant as possible," Shaye declared.

ATTENTION-GETTER

FLYING STREAMERS attract the attention of grocery shoppers to the packaged air conditioners which cool Detroit's Big Bear supermarkets.

AIR-COOLED HOME UNIT SHIPMENTS PASS 1,300

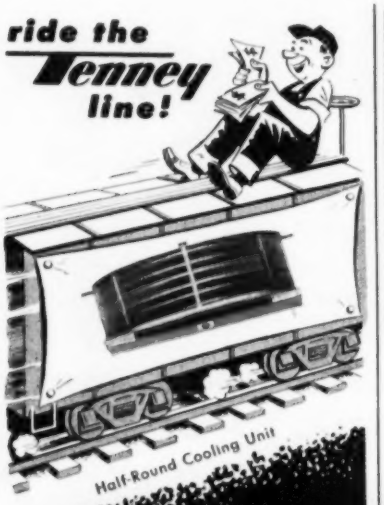
Shipments of Airtemp air-cooled residential air conditioners passed the 1,300-mark in August, according to J. F. Knoff, vice president and general sales manager of Chrysler Airtemp. Majority of installations are being made in the east Texas, Missouri, southern Ohio and Atlanta regions, the company reports.

WESTINGHOUSE COOLS TENN. DRESS PLANT

A $43,000 Westinghouse comfort air conditioning system has been installed in the Fayetteville, Tenn.. plant of Serbin, Inc., manufacturers of dresses.

According to C. Malone, manager of the dress plant, the system is made up of seven packaged "Unitaire" air conditioners located strategically throughout the two story plant. The units deliver 145 tons of cooling effect.

Installation was handled by John W. McDougall Co. of Nashville.



just one of our many units that really make money for you with easier, more dependable installations, and customers 100% satisfied!

Interested?

Talk it over with

Tenney ENGINEERING, INC.
26 AVENUE B, NEWARK 5, N. J.
Plants: Newark, N. J., Union, N. J. and Baltimore, Md.

Circle No. 47 on Reader Service Card

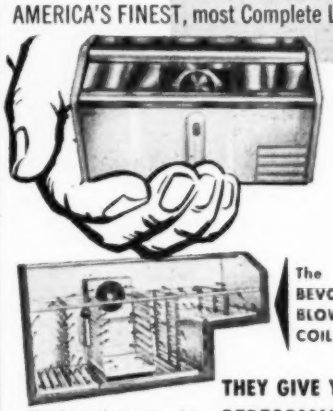
What is the Hermetic Eye?

WSF

Circle No. 48 on Reader Service Card

INCREASE SALES with BEVCO COOLERS

AMERICA'S FINEST, most Complete Line



Here's modern, speedy, dry cooling at its best, for all beverages provided by the BEVCO field-tested Blower Coil refrigeration system that's trouble-free and dependable. The 5-year warranty guarantees perfect service. Water equipment, dividers, casters, stainless interiors, exteriors, available in all models.

THEY GIVE YOU PERFORMANCE PLUS YEAR AFTER YEAR!

SEND FOR CATALOG A-1

The BEVCO Company, Inc.
3316-28 S. BROADWAY • ST. LOUIS 18, MO.

Circle No. 46 on Reader Service Card

NEW L-O-F DISTRIBUTORS

Libbey-Owens-Ford Glass Co. has appointed 10 new distributors for superfine fiber glass. The additional distributors include: Mid-State Steel, Inc., Nashville, Tenn.; Arnold-Brown Metals & Supply Co., Birmingham, Ala.; Paragon Supply, Inc., Syracuse, N. Y.; Parker Insulation Co., Salt Lake City area; Metal Service Corp., Charlotte, N. C.; Moncrief-Lenoir Mfg. Co., Houston, Tex.; Midland Engineering Co., Indianapolis; Dodge Engineering Co., Detroit; D. M. Peffley & Son, Inc., Dayton; and R. L. Moore Pipe & Boiler Covering firm, Raleigh, N. C.

NEW IND. HOMES FEATURE BUILT-IN CONDITIONER

Built-in room air conditioners are featured in the low cost housing development being constructed in Homestead Gardens, a new single-family residential development in Hammond, Ind.

The development, handled by Jack Dietrich, president of Home-

FIRST COUPLE to buy an "air conditioned" home in the new Homestead Gardens development examine the built-in room cooler with Jack Dietrich, head of the construction firm.

stead Construction Corp., is scheduled for completion in 1955 and will consist of 140 single family residences ranging in price from $11,450 to $15,000.

The air conditioning home is one of eight different plans with 16 variations available in the development. It features a ¾-hp. Mitchell room air conditioner which is installed through the wall of the dining area in the combination living-dining room. Since the air conditioning unit provides instant heat as well as cooling, the air conditioner remains in the home throughout the year. Air circulation through the house is aided by two built-in fans, one in the kitchen and another in the bedroom.

The air conditioned house sells for $12,700, including a 42½x130' lot. It consists of two bedrooms, a large living-dining room and a kitchen.

BUY FROM YOUR REFRIGERATION WHOLESALER

TANGIERS COLD STORAGE LARGEST IN N. AFRICA

Depositos Frigorificos de Tanger, S. A., a cold storage company in Tangiers, French Morocco, has completed the first large-scale commercial refrigerated storage building in North Africa. The main building houses a series of ten refrigerated rooms for cold and frozen storage of 450 tons of eggs, fruits, vegetables, and meat.

Refrigeration in the ten rooms is provided by 5 and 7½ hp Frigidaire compressors combined with

Your No.1 DEMAND...

the CONDENSER must be

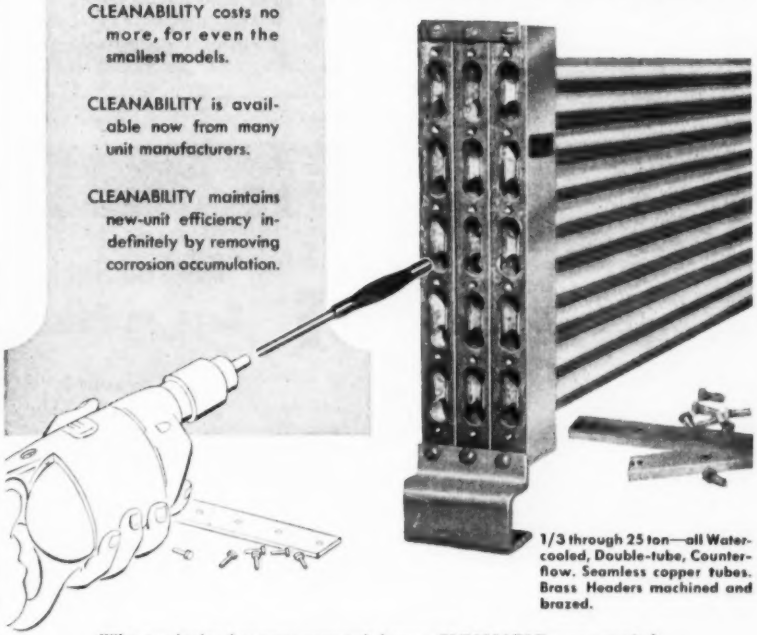
CLEANABLE

Because...

CLEANABILITY costs no more, for even the smallest models.

CLEANABILITY is available now from many unit manufacturers.

CLEANABILITY maintains new-unit efficiency indefinitely by removing corrosion accumulation.



1/3 through 25 ton—all Water-cooled, Double-tube, Counter-flow. Seamless copper tubes. Brass Headers machined and brazed.

Why not insist that your next unit have a CLEANABLE water-cooled condenser? Especially since leading manufacturers, one after the other, are recognizing the "must" advantages of accessibility to cleaning and are equipping their units accordingly. Initial purchase cost is no higher, and longer life and more economical performance are guaranteed. The CLEANABLE feature enables you to recover new-unit efficiency and thus maintain 100% economical operation indefinitely. Water-tubes are accessible from both ends on all size models.

Wholesalers in Principal Cities
Write for descriptive literature.

HM Halstead & Mitchell

OFFICES: Bessemer Building, Pittsburgh 22, Pa.

Circle No. 44 on Reader Service Card

eight Frigidaire forced air cooling units in the cold storage rooms, and with Dole plates in the frozen storage rooms. Temperatures ranging from 0 F to 40 F are maintained in the various rooms according to the requirements of the stored products.

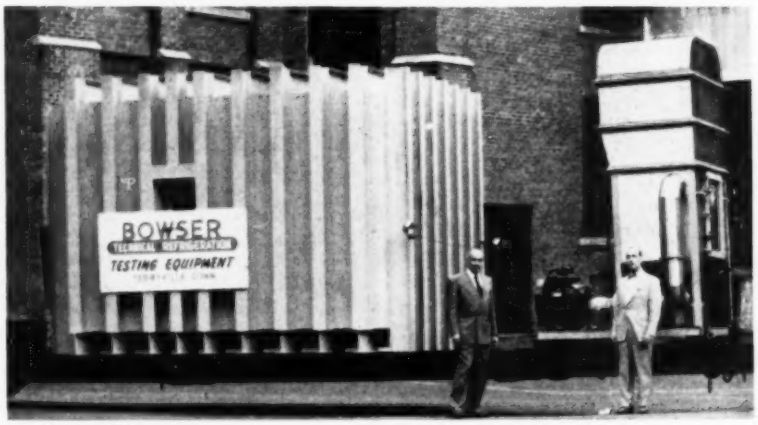
This installation is regarded as the most modern and complete yet attempted in North Africa.

G-E DEVISES TEMPLATES FOR CONDITIONING LAYOUT

A template especially designed to simplify layout of home heating and cooling equipment on architectural plans has been developed by the Home Heating & Cooling Dept. of General Electric Co.

The multi-purpose plastic drafting aid can be used for locating G-E home heating and cooling equipment on plans and also as a guide for spotting "Air Wall" system registers. Equipment outlines are ¼" scale. The templates are available from G-E home heating and cooling dealers.

TEST CHAMBER SIMULATES ATMOSPHERES FOR AIR FORCE



LATEST ADDITIONS to Bowser's equipment for the field of flight simulation and environmental testing are shown here. At the left, behind S. V. Zavoico, president of Bowser Technical Refrigeration, is walk-in chamber custom built for Dalmo Victor Co., San Carlos, Calif., to reproduce altitudes up to 80,000 feet and temperatures from -85 F to plus 167 F. On the right, behind H. I. Rudman, project engineer, is a stainless steel sand and dust chamber built for Wright-Patterson Air Force Base, Dayton, to simulate desert atmospheres for component testing. In this "indoor desert", temperatures of 25 C and 71 C combine with any air velocity from 100 to 2300 fpm to simulate the range of atmospheres which might prove to be the shortcoming of even the best designed jet plane or deadly missle. Pretesting of electronic and mechanical equipment helps to reduce costly breakdown and loss of men, planes and equipment.

the *adjustable* CAPILLARY TUBE for perfect Refrigerant Control

- ***Remains constant,* once adjusted to a given resistance.**
- **Assures *capacity balance* between unit and capillary tube resistance.**
- **Eliminates float or automatic expansion valve.**
- **Equipped with 150 mesh monel screen, easily removed for cleaning.**
- **Comes complete — ready to install.**
- **Sold by Leading Wholesalers.**

Send for fully descriptive Bulletin SE 51

Allin MANUFACTURING COMPANY
1153 West Grand Ave., Chicago 22, Ill.

Circle No. 52 on Reader Service Card

Handy Bender says

"Bent on Saving? Save on Bends!"

Still using old-fashioned "el" fittings to turn corners? Then you are wasting time, and wasting money you could be putting in your pocket. Handy Benders eliminate the need for els by bending all kinds of pipe and tubing . . . as you go, right on the job . . . from ⅜" to 1⅛" O.D. . . . with a twist of the wrist. The money you save on your first job will probably pay the cost of this convenient, money-saving tool.

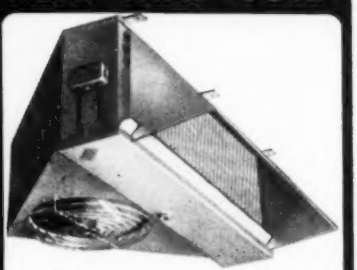
Handy

Ask your supply house, or write today to

HOLSCLAW BROS., INC.
410 WILLOW ROAD
EVANSVILLE, IND.

Circle No. 50 on Reader Service Card

"DEFROSTAIR" HEAT TRAP COIL



Automatically Defrosts Itself

Rising warm air is confined under hood of refrigeration coil housing within fin and tube area. Coil defrosts completely without warm air escaping into refrigerated zone. No re-evaporation. No special plumbing. Easy to install. Low cost. Field tested since 1944. All patents granted. Defrostair coil is designed for all low temperature applications and fresh meat rooms below 34° F.

Write for information

A. H. WITT COMPANY
940 Sycamore Ave., Los Angeles 38, Cal.
Representatives in principal cities

WITT *Coils* Over 30 years reliable service

Circle No. 74 on Reader Service Card

ABOUT PEOPLE . . .

Continued from page 21

sales manager and assistant to the general sales manager in the home office. Grant joined General Electric in 1953. He was formerly president of Midwest Heating Service, Waukegan, Ill.

•

O. L. (Lee) Liepin has been named branch manager in charge of the Philadelphia office of General Controls Co. Liepin was formerly assistant Philadelphia branch manager. He joined the company as a refrigeration field engineer in 1951. He is a graduate of the New York State Maritime Academy and has served in the merchant service and in the U. S. Navy.

•

Lawrence L. Arbuckle has been named Bell & Gossett Co.'s territorial representative for heating and industrial equipment in southern Alabama, western Florida and lower eastern Mississippi. Arbuckle formerly was manager of the company's refrigeration division.

•

Walter Smallwood has been named factory sales representative for Canada, with the exception of British Columbia, by Curtis Mfg. Co. He will represent all the products of the refrigeration division. He will have headquarters in Toronto.

•

Bert Cole, eastern regional manager of Servel, Inc., has been named vice president and member of the board of Servel-New York Corp., the company's distributing subsidiary in the New York metropolitan area and eastern New York State. Cole joined Servel in 1952.

Circle No. 53 on Reader Service Card

For a Faster Sweating Job

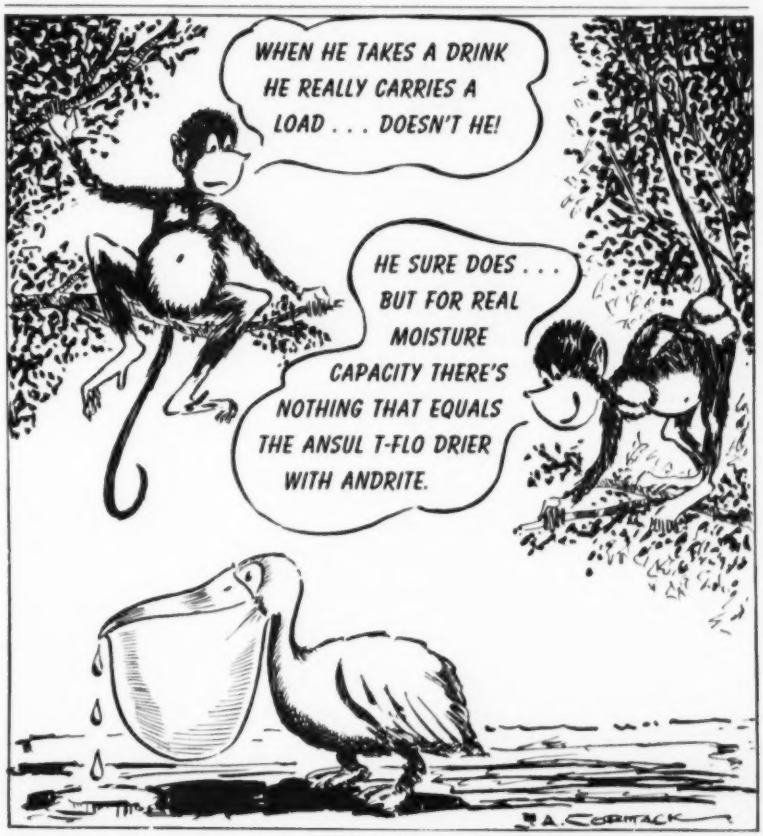
Clean Fittings with **SCHAEFER** *Brushes*

(Look for this trademark)

Made of Stainless Steel Wire, secured in 4-ply wire handle with wood grip. Strong, stiff, wear-resisting, corrosion-proof. 12 Sizes, from ¼" to 2⅛" O.D. and ¼" to 2" I.D. Order a complete set from your Refrigeration Equipment Wholesaler.

SCHAEFER BRUSHES —MILWAUKEE—

SCHAEFER BRUSH MFG. CO.
117 W. Walker St., Milwaukee 4, Wis.


WHEN HE TAKES A DRINK HE REALLY CARRIES A LOAD . . . DOESN'T HE!
HE SURE DOES . . . BUT FOR REAL MOISTURE CAPACITY THERE'S NOTHING THAT EQUALS THE ANSUL T-FLO DRIER WITH ANDRITE.
A. CORMACK

SEE PAGE 8

You'll get ideas at the exposition

You are cordially invited to visit Ranco in Booth 619 and get dozens of profitable ideas . . . about refrigeration and air conditioning controls. Stop in at our headquarters, see the latest Ranco developments and talk with men from the factory. We'll show you how to make your job easier with Ranco controls—available for more than 4,000 replacement installations.

Ranco Inc.

WORLD'S LARGEST MANUFACTURERS OF REFRIGERATION CONTROLS

RANCO CONTROLS

COLUMBUS 1, OHIO

HERE'S HOW!

Don't Forget To Oil Newly Installed Systems

Here is a timely reminder for all service and installation men engaged in installing Freon systems: *Don't forget to add oil as you install and charge new systems!*

Compressors are often damaged by insufficient lubrication because oil in the crankcase is not checked when a system is started, and after the customary check-back within the next 48 to 72 hours. Such a call-back should be a *must*, since the customer has a right to expect that a new installation will have a thorough inspection for fixture temperature, control settings, to see that the motor is lubricated, to check oil in the crankcase and to make any other adjustment deemed necessary.

Many times no thought is given to the affinity of Freon-12 to oil. In many cases 20 pounds, 30 pounds, 50 pounds, 75 pounds or 100 pounds of Freon-12 refrigerant is charged into a new system and no oil is added to the crankcase.

Some systems require the use of an oil separator. The oil separator manufacturer specifies the amount of oil that should be charged into the oil separator so as to not deplete oil in the crankcase. Normally, this will vary from approximately 8 ounces in the smaller size to perhaps 32 ounces to 48 ounces in the 7½-hp installation.

It is good practice to use a rough rule-of thumb method, which is to add one pint of oil to the crank case for each 10 pounds of Freon-12 refrigerant charged into a system. You may have an initial overcharge of oil, but the call-back inspection within the first 48 to 72 hours will permit adjusting the oil level and certainly is more economical than changing the compressor due to damage.

Use the following as a guide for new systems:

3 hp — Check and add 10% oil over 12-lb. Freon charge.

5 hp — Check and add 10% oil over 20-lb. Freon charge.

7½ hp — Check and add 10% over 30-lb. Freon charge.

I DO IT THIS WAY

EVER have trouble keeping the tips of your electric soldering irons tinned? Well, we have. But we finally solved the problem by tinning them with silver solder. Be sure to remove the tips from the irons before tinning them in this way, however, as it requires considerable heat to apply the silver solder.

John F. Crowley
Calais, Maine

Maintenance Tips for Evaporative Condensers

Here is some important advice on year-around maintenance of evaporative condensers which comes from John Engaliacheff, Jr., of Baltimore Aircoil Co., who certainly qualifies as an expert on the subject.

Once every month (1) Check bearings (on summer operating jobs repeat same at start and end of the season) and lubricate if necessary. (2) Clean and flush the pan. (3) Clean strainer. If atmosphere is extremely dusty it may be necessary to clean it as often as once a week. (4) Check spray nozzles, clean if necessary. (5) Check belt adjustment. (6) Look over the unit carefully and if any other work is necessary do it at once.

Once a year (1) Repeat monthly procedure. (2) Check system for non-condensables and if necessary purge the system. (3) Check fan shaft collars. (4) Check float valve. (5) Clean and paint unit.

Handle Hand Tools For Safety's Sake

All of us work with hand tools every day, and our tendency probably is that there's little about their use we don't understand. However, a review of safe practices never harmed anybody, so here are some suggestions from the National Safety Council that you might use.

Carry hand tools in tool box, tool bag, or tool belt, not in pockets or pants belt. Edged or pointed tools especially should not be carried in your pockets.

Keep tools clean. Grease and dirt cause slips and mashed fingers.

Check tools for good condition before using. Discard defective and dull ones.

Use the right-size and type tool for the job. The right type of tool makes the job easier and safer.

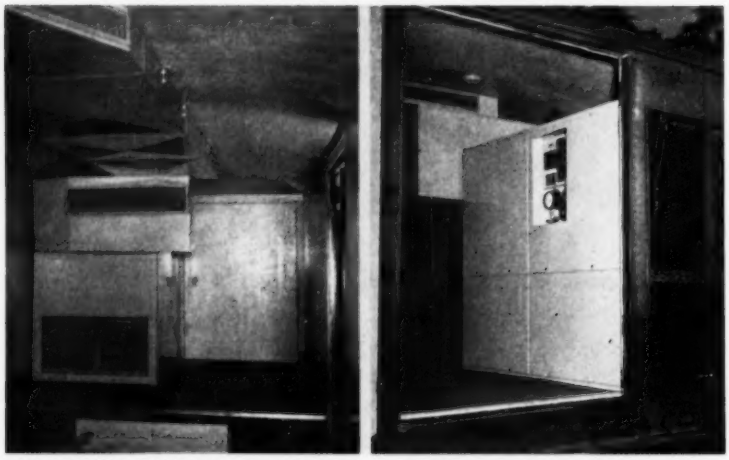
Don't use excessive force or pressure on hand tools. If the tool requires too much exertion, it's not the right tool for the job.

When you're doing work that causes sparks and particles to fly about, protect your eyes by wearing goggles.

Mushroomed and burred heads on striking tools can cause serious injury — get those heads ground down.

When possible, **pull** on a hand tool rather than **push** on it.

Air Force Conditions Flying Lab



YEAR-ROUND CLIMATE control for U. S. Air Force airborne mobile laboratories is provided by specially designed air conditioning units developed by Remington Corp. At left is an interior view of one of the semi-trailers. Grilles shown are for interior intake and exhaust of air; ductwork overhead insures circulation and ventilation. At right, front view of the "flying lab" with air conditioning unit installed. The equipment has 4 tons capacity and is designed to operate at outdoor temperatures from -65 F to 130 F. Automatic control panel is shown on side of unit; grilles at right.

* * *

The first year-round, heating-cooling air conditioning units manufactured by Remington Corp. for U.S. Air Force airborne semi-trailers have been delivered to Wright-Patterson Air Base, Dayton, Ohio, where they have passed performance tests and been accepted, Herbert L. Laube, Remington president, has announced.

The special units will be used in air-transportable semi-trailers equipped as mobile laboratories, Laube said. Purpose of the units is automatically to cool and dehumidify the trailer's interior in summer, humidify and heat it in winter, filter out dirt, pollens and foreign matter and provide controlled ventilation and circulation of air inside. They are designed to operate at outdoor temperatures from 65F. below zero to 130F. above.

Produced under specifications limiting weight and size, the multifunction unit has a cooling capacity equivalent to the melting of 4 tons of ice daily. It has an air-cooled, hermetic refrigeration system of 7½ hp and may be powered by mobile generators or available commercial electric supply. Automatic controls provide selective, uniform interior climate conditions the year round. A new design was employed to enable the unit to resist shock and rough usage.

Several of the unit's special devices, Laube said, are outgrowths of those found in Remington's commercial window and console type room air conditioners, many of which are going to the armed forces. Remington is considering a version of the unit for use in industrial applications where mobile air conditioning is required, he added.

NEW FADA LABORATORY USES TENNEY EQUIPMENT

Fada Radio and Electric Co., Bellville, N. J., is installing a complete new test laboratory for testing equipment manufactured for the U.S. Government. The new laboratory will include provisions for meeting test specifications of all military contracts undertaken by the company.

Included in the equipment already installed are two environmental test chambers manufactured by Tenney Engineering, Inc. One chamber is for conducting temperature tests only; the other is for temperature and humidity testing.

The temperature chamber comprises two separate units: (1) the chamber proper into which equipment is placed for testing, and (2) the matching unit which produces the low and high temperatures. Temperature range of this equipment is from -100 F to 185 F.

To produce low temperatures, dry ice (to 150 lbs.) is placed in the container of the temperature-producing unit and a fan circulates air over the ice and into the test chamber.

To produce high temperatures, air is circulated around heating elements. Thermostat controls the temperatures at pre-set values. Thus is provided a simple but effective unit for testing equipment under constant temperature conditions.

This unit and the humidity chamber may be used for testing components such as resistors, condensers, transformers, etc. or for testing complete assemblies such as power supplies. Leads can be brought into the chambers for operating equipment and for connecting test instruments.

The humidity chamber not only simulates humidity and temperature conditions but also can be regulated for cycle testing. When conducting cycle tests, items are left in the chamber for specified periods of time during which the temperature may be varied from 35 F to 180 F and relative humidity from 20% to 95%.

TRANE CHATTANOOGA SALES OFFICE MOVES

The Chattanooga, Tenn., sales office of Trane Co. has been moved to 308 South Kelley St. Jack F. Spears is sales engineer in charge of the office.

LARSON JOINS TRANE

Appointment of Carl W. Larson to the products engineering department has been announced by Trane Co. Larson will be assigned to the development of new air conditioning and heating products.

OPPORTUNITIES

(Classified Advertising)

Rates: for "Positions Wanted, $6.50 minimum, limit 25 words. For all other classifications, $8.00 minimum for 25 words or under, each additional word 20¢; boldface type or all capitals, $10.00 minimum for 25 words or under, each additional word 25¢.

EQUIPMENT FOR SALE

Attention, Refrigeration Wholesalers: FHP V-Belts, Gates-Goodyear-Dayton. Brand new, must sell out. For inventory and price-list call, write, wire: Industrial Equipment Associates, 130 W. 42nd Street, N. Y. C. LO 4-8270.

JORDON SALES CO. STARTS DRIVE FOR DISTRIBUTORS

A drive to set up distributorships in all parts of the country for its upright home freezers, room air conditioners and portable de-humidifiers has been launched by Jordon Sales Co., according to Harry Fogel, vice president in charge of sales.

According to Fogel, the drive for distributorships is part of the firm's production and sales expansion and is a preliminary move to the construction of a new large plant in Philadelphia.

"We expect to have a distributor for our domestic lines in every major and secondary market and a Jordon dealer in every city, town and hamlet in the nation in a matter of months," Fogel said. "We also know that with added distribution assured us from coast to coast, our new expanded production facilities will be geared to meet future demands for our products," he added.

Fogel said the expansion program on distribution is being directed by Herbert Freedman, national director of sales. Potential distributors and dealers are being interviewed as quickly as possible, he reported, but before franchises are offered Jordon is making complete surveys.

CARRIER EXECUTIVE DIES IN FRANCE

John L. McLaughlin, 55, an executive of Carrier Corp., was fatally injured recently in an automobile accident near Amiens, France. Manager of Carrier's unitary equipment plant, he was in Europe on a combined business and vacation trip with his wife and niece. McLaughlin was employed by Mack Trucks, Inc. in Plainfield, N. J., before joining Carrier in 1932. His first assignment was as a draftsman in the New Brunswick, N. J. plant. In 1950, McLaughlin became plant manager, a position he held at the time of his fatal accident.

BUY FROM YOUR REFRIGERATION WHOLESALER

Circle No. 48 on Reader Service Card

Your Customers' Best Buy. . .
IDEAL
Speed-Freeze
PRODUCTS
BEVERAGE COOLERS
unexcelled storage capacity
(56 cases 12 oz. - 8 ft. cooler!)
INSTANTANEOUS DIRECT DRAW DRAFT BEER COOLERS
(with refrigerated faucets)
IDEAL
COOLER CORPORATION
2953 Easton Ave., St. Louis 6, Mo.

Circle No. 57 on Reader Service Card

NO MORE FREEZE-UPS
of expansion valves or capillary tubes!
ICE-X works like magic
SERVICE MEN SAY: "ICE-X IS GREAT!"

When ice forms in expansion valves or capillary tubes, ICE-X is a sure remedy . . . ICE-X is non-corrosive —harmless to parts. An ice-eliminator that can't be beat for Freon, Carrene, or Methyl Chloride systems . . . Order from your jobber. If no jobber, order direct.

Service doesn't falter when it comes from Harry Alter
Jobbers: Ask for special offer!
The HARRY ALTER CO.
Exclusive ICE-X Distributor
1728 S. Michigan Ave. Chicago 16, Illinois

Circle No. 55 on Reader Service Card

On this Acme heat pump installation...

The new 74th St. School of St. Petersburg, Florida has installed a radiant heating system incorporating the year round heating and air conditioning of Acme's Flow-Temp Heat Pump.

these people gained...

The TAXPAYER saved

Installation cost of the entire heating system for the 74th Street School was thousands of dollars less than that of a conventional fuel-type heating system, according to P. K. Kennard, prominent St. Petersburg architect. In addition, operating costs of the heat pump system are much lower.

The CHILDREN get clean, healthful heating and air conditioning

Acme Flow-Temp Heat Pumps supply chilled water in the summer and hot water in the winter. The clean, flameless heat provides a healthier, more even temperature. Individual thermostatic controls for each classroom regulates the heat to meet the needs of the pupils.

The ARCHITECT got greater freedom of design

Using water as a heat source, the Acme Heat Pump eliminates space-consuming boilers and fuel storage rooms. It abolishes scenery-marring smokestacks and the ever present danger of fire. Every inch of space is devoted to the most utilitarian and eye-appealing need.

a plumbing and heating CONTRACTOR got a big contract

Installation of the Acme Flow-Temp Heat Pump is a simple matter since it comes from the factory completely assembled and pre-tested. Jones, Inc., won the contract for five Pinellas School installations. This shipment was the largest in the world to date to a single user. Five Pinellas County Schools now have the same type system.

Write today for catalog FT50-PH.

ACME PRODUCTS

ACME INDUSTRIES, INC.

JACKSON, MICHIGAN

Mfgs. of a complete line of Air Conditioning and Refrigeration Equipment

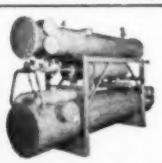
Evaporative Condensers
Cooling Towers
Floor-type Unit Coolers

Direct Expansion (Dry-Ex) and Flooded Liquid Chillers

Heat Exchangers, Oil Separators

Shell and Tube, Shell and Coil Condensers

Receivers, Pipe Coils



Packaged Liquid Chillers to 225 tons

Flow-Temp Heat Pumps

Flow-Cold Liquid Chillers

Convectors for Heating and Cooling

Continuously serving the refrigeration and air conditioning industry since 1919

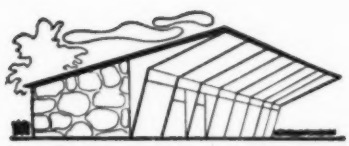
Circle No. 59 on Reader Service Card

COOLING

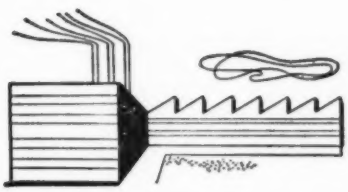
Circulation and Humidity Control

HEATING

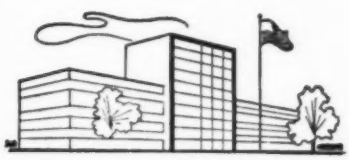
AIR CONDITIONING *Section*



COMMERCIAL



INDUSTRIAL



INSTITUTIONAL

RESIDENTIAL

TABLE OF CONTENTS

CBS-TV's "Picture Installation" **68**

Testing and Service Methods for Package Commercial Air Conditioners **70**
(Part 3—The Air Distribution System)

Selecting Equipment for Heat Pump Jobs **74**

Useful Air Conditioning Literature **77**

What's New in Air Conditioning Equipment **78**

THIS SPECIAL SECTION is devoted to all phases of Air Conditioning — Residential, Commercial and Industrial, including both self-contained packaged units and central-station type equipment for seasonal or year-round application.

It includes information on the merchandising, selling, installation and maintenance of Air Conditioning equipment, reports on the New Products which are being introduced in this field, and announcements of Literature available from manufacturers.

Our readers have shown they appreciate this service, and the convenience of being able to locate quickly all the information on Air Conditioning in each issue in this special section of COMMERCIAL REFRIGERATION AND AIR CONDITIONING.

5 of many REASONS WHY—

CHRYSLER AIRTEMP "PACKAGED" AIR CONDITIONERS ARE THE BEST YOU CAN SELL TODAY...

★ Sealed radial compressor, pioneered by Chrysler Airtemp over 16 years ago, is so dependable, it's now backed by a 5-year warranty, which you can pass on to your customers.

★ More quiet operation—the radial compressor design reduces vibration to a minimum. Vibration and noise are further reduced by flexible connections in the suction and discharge lines and rubber compressor suspension.

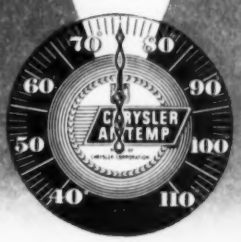
★ Exclusive "Maxi-Fin" Cooling Coil increases cooling surfaces for greater efficiency.

★ "Airfoil" Grille with individually adjustable vanes to direct cooled air wherever wanted.

★ "Bonderite" anchors the paint to the metal—resists corrosion—fortifies finish around accidental breaks.

There are more reasons, too, why it will pay you to sell the "Packaged" Air Conditioning most people buy—Chrysler Airtemp! Send coupon today for all of the facts.

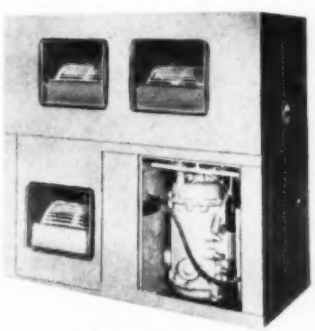
Comfort Zone FOR PROFIT



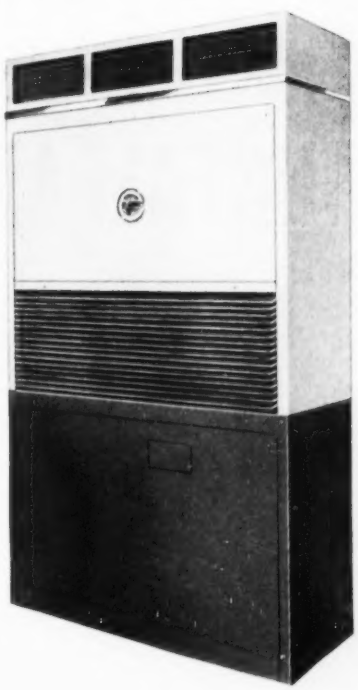
Chrysler Airtemp

HEATING • AIR CONDITIONING FOR HOME, BUSINESS, INDUSTRY

AIRTEMP DIVISION OF CHRYSLER CORPORATION
DAYTON 1, OHIO



AIR COOLED
"Packaged" Air Conditioner



WATER COOLED
"Packaged" Air Conditioner

Airtemp Division of Chrysler Corporation CR&AC—10
P.O. Box 1037, Dayton 1, Ohio

I would like to know more about the Chrysler Airtemp proposition.

Name _____

Address _____

City _____ Zone _____ State _____

Guaranteed by Good Housekeeping

Circle No. 24 on Reader Service Card

◀ COVER PHOTO

One of four huge air conditioned studios at CBS's Television City

CBS-TV's "PICTURE INSTALLATION"

TELEVISION is a "hot" industry in more ways than one. The tremendous amounts of electrical and electronic equipment, plus the great quantities of stage lighting equipment, combine to make TV production areas extremely uncomfortable working locations for actors and technicians alike.

To offset this tremendous heat load generated in the production of TV programs, a 600-ton air conditioning system has been installed in CBS Television City in Los Angeles. To provide the utmost in flexibility required to handle this plant's temperature requirements, no less than 10 modern electric control centers were required.

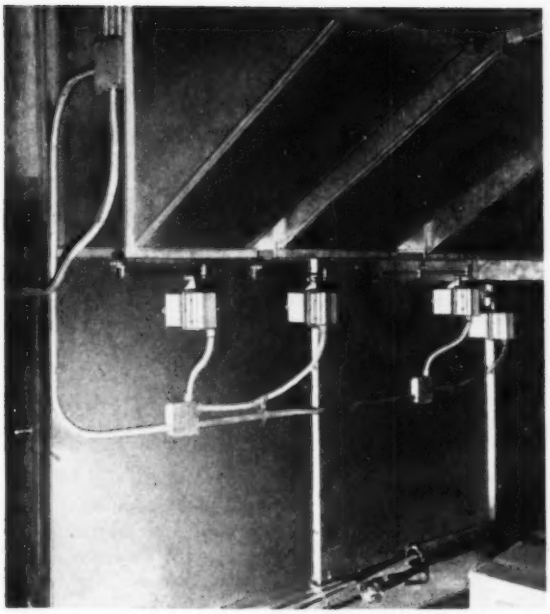
Zoned air conditioning cools off a "hot" industry

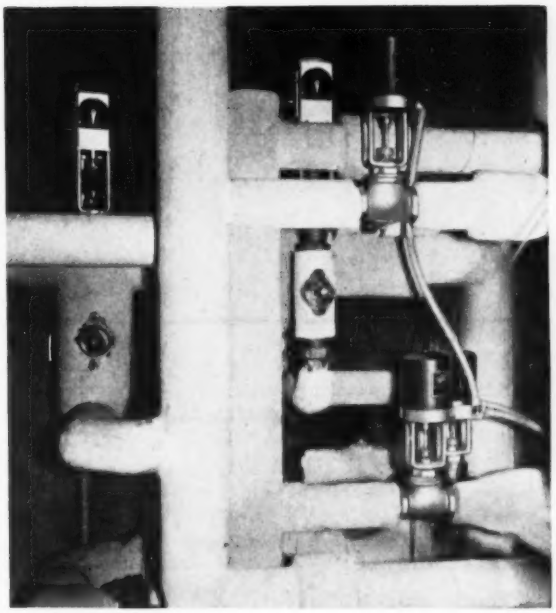
According to engineers of Kilpatrick & Co. of Los Angeles, air conditioning and ventilating contractor for the project, these centralized control panels have not only provided the complex zoning effect which was desired but also have resulted in lowering installation costs and greatly simplifying field service problems encountered on this huge air conditioning system.

Said to be the world's largest television plant, the new CBS-TV center actually encompasses within its walls practically all of the ordinary activities encountered in a small city. It's a factory, complete with paint and carpentry shops; it's an office building; it's a multiple auditorium, with four huge studios and three tremendous rehearsal halls.

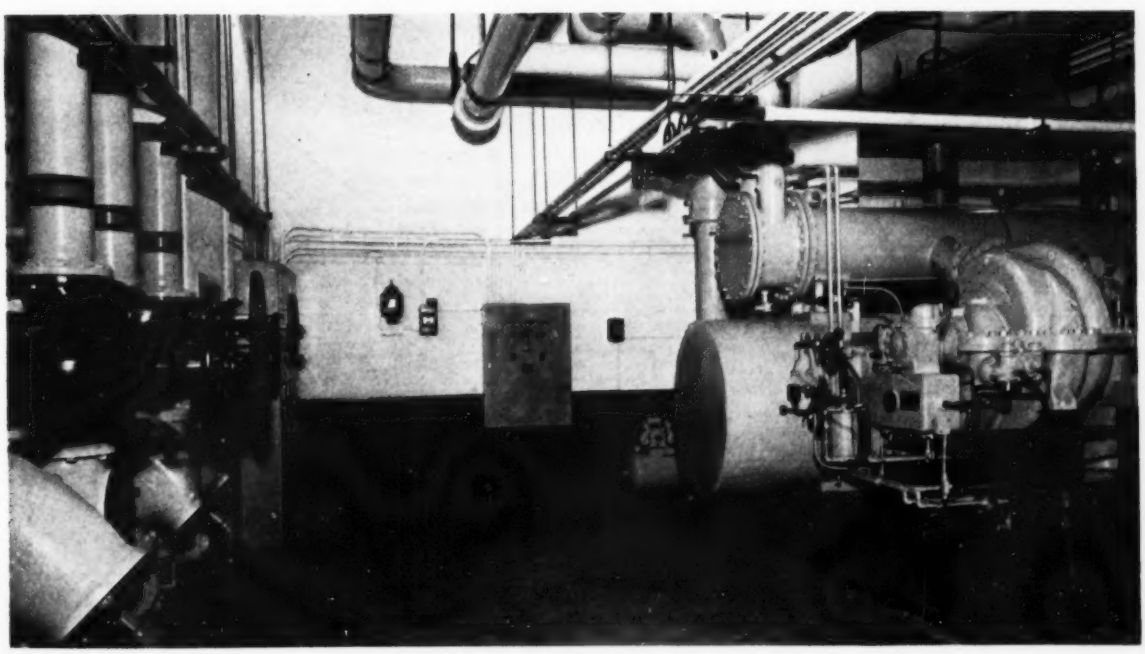
All in all it covers some 8½ acres of ground and has 12,000 feet of exterior all-glass walls. It's a home

Continued on page 93

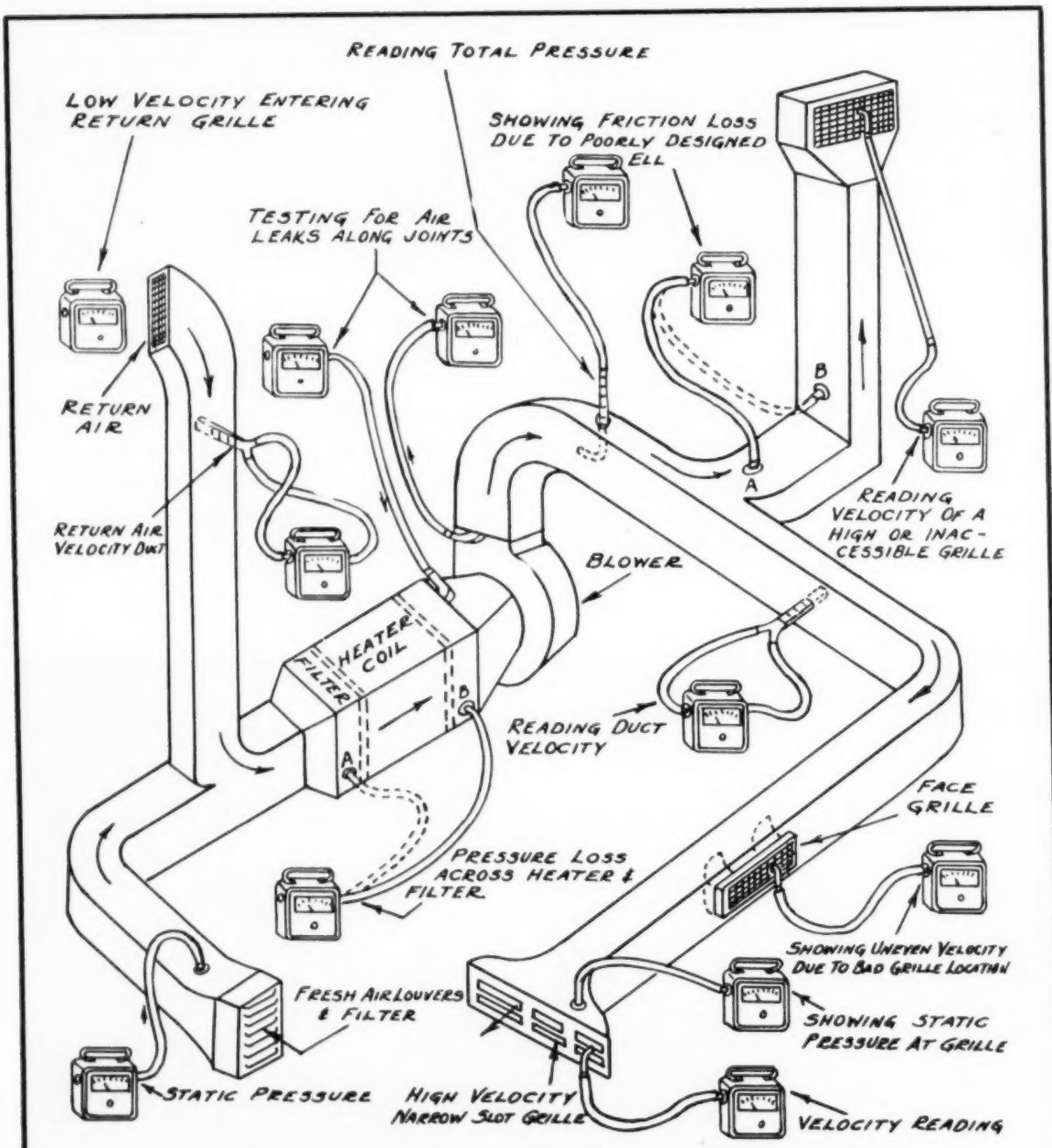




UTMOST FLEXIBILITY was the primary aim in designing the 600-ton air conditioning installation for "Television City". To help provide this complex zoning effect, mixing damper controllers (top left) were installed on the office air conditioning system, and 3-way mixing valves and change-over valves (top right) were installed to handle the flow of both heated and chilled water for the studio air conditioning systems. Part of the equipment which powers this huge installation is shown in the bottom photo.



Testing and Service Methods for Package Air Conditioners


READING TOTAL PRESSURE
LOW VELOCITY ENTERING RETURN GRILLE
SHOWING FRICTION LOSS DUE TO POORLY DESIGNED ELL
TESTING FOR AIR LEAKS ALONG JOINTS
RETURN AIR
RETURN AIR VELOCITY DUCT
READING VELOCITY OF A HIGH OR INACCESSIBLE GRILLE
BLOWER
HEATER COIL
FILTER
READING DUCT VELOCITY
FACE GRILLE
PRESSURE LOSS ACROSS HEATER & FILTER
SHOWING UNEVEN VELOCITY DUE TO BAD GRILLE LOCATION
FRESH AIR LOUVERS & FILTER
SHOWING STATIC PRESSURE AT GRILLE
STATIC PRESSURE
HIGH VELOCITY NARROW SLOT GRILLE
VELOCITY READING

Methods of checking air velocity and static pressure.

(Illustration courtesy of Illinois Testing Laboratories, Inc.)

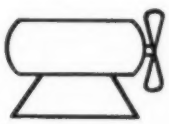
Part 3: The Air Distribution System

by Edward F. Dowis

A WELL designed and maintained air distribution system will deliver the right amount of conditioned air to each part of the space being served, and properly mix it with room air before it comes in contact with the occupants. It must also return the air to the conditioner for cleaning and for removal or addition of heat and moisture.

The required quantity of outside air must be admitted to take care of ventilation. Air movement should be controlled throughout the conditioned space. All these things must be accomplished without exceeding the permissible noise level.

Service to the air flow system is of three general kinds.



Propeller Fan

1. Service to fans and blowers and their drives.
2. Service to the duct system, including vanes, dampers, grilles and diffusers for both supply and return air.
3. Service to equipment such as filters and coils, placed in the air stream for cooling, heating, cleaning, etc.

Fans can be classified into two general types: axial flow or propeller type, in which air flow is parallel with the shaft; and centrifugal, in which air flow is perpendicular to the shaft.

Axial flow fans are used mostly in unit heaters and coolers, where they operate in the open, rather than in a duct system. When enclosed within a tube or duct, they are called tubeaxial and when surrounded by vanes to direct air flow, they are vaneaxial.

The curvature, pitch, and shape of the blades all affect the operating characteristics. Axial flow fans operate at higher speed than centrifugal and are usually connected directly to the motor shaft.

Maintenance of axial flow fans consists in keeping blades clean to prevent unbalance. Blades should all be set for the same pitch and be tight on the hub. They are usually fastened with rivets and can be tightened with a hammer and rivet buck.

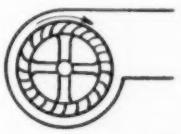
When a fan is removed from the shaft, it should be replaced at the same angular position, since the fan and rotor are usually balanced together.

Centrifugal fans are usually used where the air has to be delivered through considerable resistance, as through a duct system. Commercial package conditioners usually contain centrifugal fans. Since this type fan operates at a slower speed than the propeller type, a belt drive is usual.

Centrifugal fans are called forward curved, backward curved, or radial, depending upon how the blades are curved in relation to the direction of rotation. A forward curved fan will deliver more air for a given size and speed than the others and is therefore most popular. The backward curved fan may be more quiet at higher speeds and is sometimes used direct connected to the motor shaft.

Maintenance of centrifugal fans consists in keeping bearings lubricated and aligned. Blades and housings should be kept clean and the blade centered in the housing. If corrosion is noted, a good protective paint should be applied. Belts and pulleys must be kept adjusted and aligned.

The motor pulley is sometimes made adjustable so that the vee belt will ride near the center for slow fan speed or near the rim for high speed. Where it may be desirable to vary fan speed, such a pulley may be installed.



Centrifugal Fan

Air delivery will vary about in proportion to fan speed change but the horsepower required will vary much more sharply, usually at about the cube of the speed change. It is, therefore, quite possible to hopelessly overload a motor by trying to make it drive a fan too fast. Where any considerable increase is made, the motor should be checked for heating.

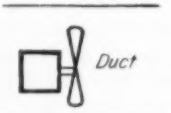
Any change in the air circuit, such as alterations to the duct system, dirt accumulation on coils and filters, changing damper settings, etc., will change both air flow rate and horsepower requirement. The power requirement will be greatest when resistance is least; that is, when drawing and discharging directly to atmosphere, or what is called free air delivery. Both air delivery and motor load falls as the circuit is restricted.

The duct system should require little maintenance except cleaning

and repairs to damage caused externally.

When cooled or heated air is delivered through unconditioned spaces, or through the outside atmosphere, the ducts should be well insulated and maintained, both to prevent heat transfer and sweating.

Heat gains or losses can be very important if insulation is neglected. Sound level may also be affected. Some ducts are lined with acoustic



Tubeaxial Fan

material which must be kept in place.

Ductwork is most often damaged by workmen standing upon or forcibly bending the sides. Joints or seams may also be opened. Any considerable change in internal dimensions is apt to cause air turbulence, noise and changed air delivery.

Canvas connectors should be installed wherever ducts are connected to fans or conditioners, to reduce noise transfer. These should be kept virtually air-tight.

The air surfaces of coils should be kept clean, and filters cleaned or replaced as necessary to keep resistance to a minimum. Restricted air flow over the coil will cause low coil temperature or frosting, decreased total capacity, and even lower sensible percentage. Fins should not be bent in the cleaning process, but any which are found to be bent should be carefully straightened.

One of the most common service operations connected with air conditioning is that of balancing the system.

When the system was designed, the sensible cooling load for each room was estimated, a supply air temperature selected, and the air requirement for each room determined by a formula such as the following:

$$\text{Cfm} = \frac{\text{Btu/hr. sensible}}{1.08 \times \text{temperature rise}}$$

The temperature rise is the difference between the supply air temperature and the temperature of the conditioned room. The duct system was then laid out to supply the estimated requirement for each room.

Even the most carefully designed system will have to be adjusted when put in operation and changes made when cooling requirements vary in any space or room.

This can be done experimentally, rather than going back to the original estimates. If one space is getting cooler than necessary, while others are still too warm, the air supply to the cooler room should be reduced or that to the warmer ones increased. The adjustment should first be made on the room most out of line from the average.

Balancing can best be done when there are dampers in both the supply and return air ducts. In this way, both the air supply to and the static pressure within the room can

be controlled. A slight pressure above atmospheric will prevent infiltration of warm air through window and door cracks. This can be obtained by partially closing return air dampers.

Most installations have dampers only in the supply ducts. These may be on the face of the supply outlets or, preferably, some distance from the outlet. If there is a choice, use the damper back of the supply outlet to reduce noise. If there are neither dampers nor adjustable louvres, part of the openings may be blanked off with sheet metal.

Many air conditioners are provided with dampers for passing part of the air around the coil. This is for the purpose of controlling dehumidification.

As the by-pass damper is opened, less air passes through the coil and its temperature falls farther below the dew point. As the by-passed air again mixes with that passing through the coil the temperature of the mixture will not be as low as with the by-pass damper closed but the percentage of moisture to sensible heat removed will be greater.

It is common practice to control the by-pass damper with a humidistat set at the highest permissible humidity. When this is exceeded, the damper is opened until sufficient moisture is removed. Then the humidistat again closes the damper, permitting the coil to operate at its maximum capacity and efficiency.

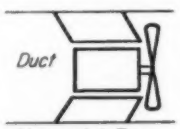
Do not leave the by-pass damper open more than necessary to keep humidity down to the permissible level.

It is often desirable to know the quantity of air flowing through a duct or being supplied to a room. This is done by measuring the velocity with an anemometer or other velocity measuring device and multiplying by the square feet area.

As many measurements at different locations as possible should be made, and the average used in the calculation. This is because velocity will vary greatly at different locations.

Some form of Pitot tube connected to a manometer or other sensitive pressure measuring instrument is usually used to measure air flow in ducts.

The Pitot tube is really a tube within a tube, the inner tube pointing upstream so as to receive both the static pressure and velocity pressure of the moving air stream. The outer tube receives pressure through



Vaneaxial Fan

a series of holes in the sides so it receives only static pressure.

The difference between the small tube or total pressure and the large tube or static pressure is due to air movement alone. The two tubes can be connected to an instrument which will indicate the difference in pressures in inches of water or directly in feet per minute velocity. If a water manometer is used, the velocity can be found by the formula:

Velocity = 4005 x the square root of the velocity pressure

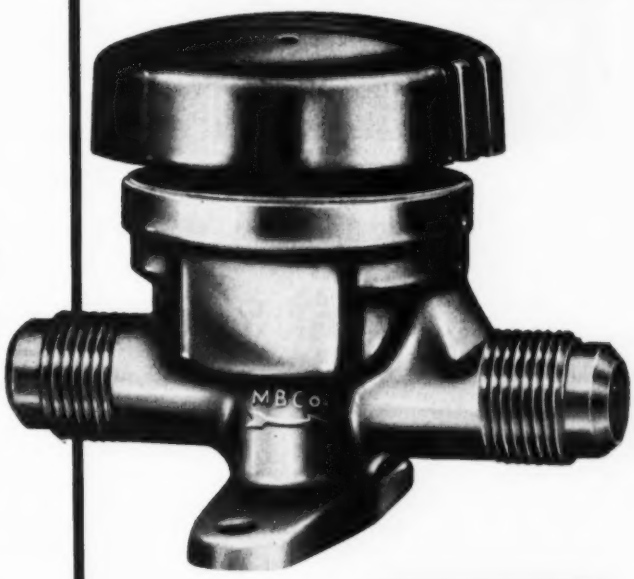
With a sensitive manometer, this method is practical for velocities around 1000 feet per minute or higher. Instruments are available which will read velocities less than 15 feet per minute.

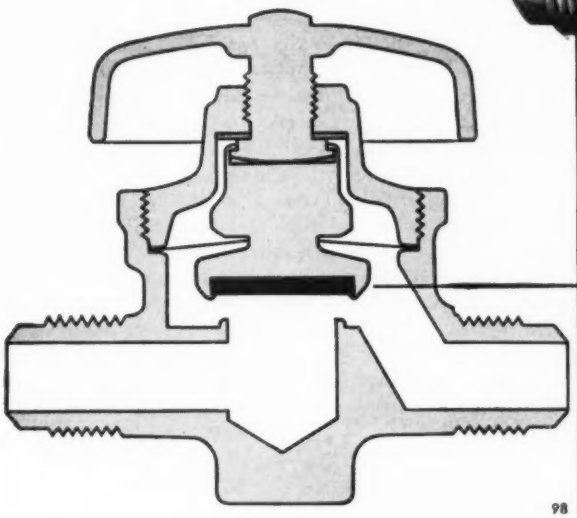
MUELLER BRASS CO.

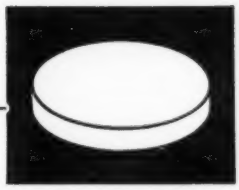
PACKLESS LINE VALVES

a fine valve you can heartily recommend in any commercial refrigeration installation

Stop in and see us! Booth 501 The All-Industry Show in November.







tough, resilient molded nylon stem disc insures positive shut-off

Mueller Brass Co. STREAMLINE Packless Line Valves are the safe, economical and reliable forged brass valves that help increase the dependability of any commercial refrigeration system. Because of their durable construction they can take considerable punishment in difficult applications and still continue to give efficient, lasting service.

Good design and fine craftsmanship account for the splendid quality of these valves. The comfortable 2-1/2″ diameter hand wheel provides good leverage for easy opening and closing. 1-1/2 turns of the hand wheel closes it. A neoprene back seal cushion prevents stem seizures and gives double protection against leakage. The nylon stem disc withstands regular charging board usage and it is chemically inert to all standard low-pressure refrigerants. The disc is resilient and shuts off the flow easily and positively even when obstructions become lodged against it. Large metal diaphragms have been pressure-tested for 100,000 openings without a failure. A "Full-Flo" seat area and refrigerant passage virtually eliminates pressure drop.

STREAMLINE Packless Line Valves are sturdy and compact — only 3″ high — with in-line ports for quick, easy installation. They are available in 1/4″, 3/8″, 1/2″ and 5/8″ sizes with flare or solder type end connections. Available from your refrigeration wholesaler.

DRIERS AND FILTERS

WROUGHT COPPER FITTINGS AND COPPER TUBING

FLARE FITTINGS

LIQUID INDICATORS

VALVES

STREAMLINE Packless Line Valves are individual and multiple packaged in sturdy metal-edge containers.

Write for our latest catalog describing the complete line of Mueller Brass Co. STREAMLINE refrigeration products.

MUELLER BRASS CO. STREAMLINE PRODUCTS

MUELLER BRASS CO. PORT HURON 10, MICHIGAN

Circle No. 61 on Reader Service Card

THE HEATING SIDE OF AIR CONDITIONING

by Wm. Henry Knowlton

Equipment Selection for Heat Pump Jobs

SELECTION of the heat pump, as in the case of any other type of heating equipment, is based on the heat loss of the building. Yet there is an important difference from ordinary heating practice, in that the capacity of the system should match the heat loss almost exactly, as there is no "allowance" for loss of efficiency in the burner or the stack.

For many years the heating trade has estimated systems on a liberal basis, figuring that coal burning systems had an efficiency of from 50 to 60%, stokers from 60 to 70%, and oil and gas burning systems up to 80%. With any of these systems an allowance was made for "efficiency" — usually an unknown factor. Owners often insisted that the contractor "install a furnace or boiler that is big enough", and paid no further attention.

All Heat Is Used

In the case of the heat pump, however, *all* of the heat that is created by the electricity used — *plus* the heat obtained from the outside source, whether air, water, or ground — will be delivered to the structure. This means that a very careful and complete heat loss analysis must be made, so that the system can operate at peak efficiency.

Design conditions will, of course, be taken into consideration. Obviously, the heat pump will find more favor in Florida, and other parts of the South, where design conditions are to 35 F., than in Michigan or Minnesota, where design conditions must go to -10 F. or even lower.

Assuming that we are going to select a heat pump which chills water as a source of heat, the temperature of the water available is also of prime importance. In some parts of Florida, for example, shallow well water is available at 70 to 75 F. the year around, and some home owners have even used their swimming pools as a source of heat.

For our purpose here, however, let us select a condition that is closer to normal, and assume the temperature of the heat source water to be 49 F. Within practical limits, we can chill this water to 42 F., giving us a water range of 7 degrees.

We also can assume that we have an average condensing temperature of 120 F. And for the purpose of this example, let us say that the building to be heated has a total heat loss of 60,000 Btu/hr.

To illustrate this problem we have constructed on the graph shown in Fig. 1 a chiller curve from 42 F water off and 7-degree water range on the scale at the left side of the graph to a similar point in the scale on the right hand side. Note that this chiller curve cuts across all condensing temperature curves (90-130 F) and all heat of compression curves (14,000-19,000 Btu).

Now start at the top of the 120 F condensing temperature curve and follow this curve down until it intersects the chiller curve. From this intersection, read straight down to the cooling capacity scale at the bottom of the chart. The capacity of the chiller shown here is 48,800 Btu/hr, which is the total heat absorbed by the refrigerant in the chiller.

To determine the number of gallons of water that must be circulated from the well, we take this capacity of 48,800 and divide it by the water range of 7 degrees times the pounds of water handled, times 60 minutes. As there are 8.3 lbs. of water in a gallon, multiplied by 60 minutes, we usually assume a factor of 500 for this quantity, to make our arithmetic easier.

Thus our formula becomes:

$$\frac{48{,}800 \text{ (Btu)}}{7 \text{ (degrees)} \times 500} =$$

13.9 gallons per minute

Find Heat Generated

At this point return to Fig. 1, going back to the intersection of the condensing temperature curve and chiller curve, to obtain the number of Btu of equivalent watt input. As shown on the heat of compression scale, this value of 17,000 Btu/hr is the heat of compression absorbed by the refrigerant gas as it goes through the compressor.

To obtain the total heat generated by the heat pump, add the 48,800 Btu obtained from the chiller and the 17,000 Btu resulting from heat of compression, and obtain a total of 65,800 Btu/hr, which is more than adequate to heat the building.

We are now interested in learning the temperature of the water that will be available to the closed circuit that actually heats the building. Turning to Fig. 2, enter the

These Graphs Will Help You Select the Proper Heat Pump for any Installation

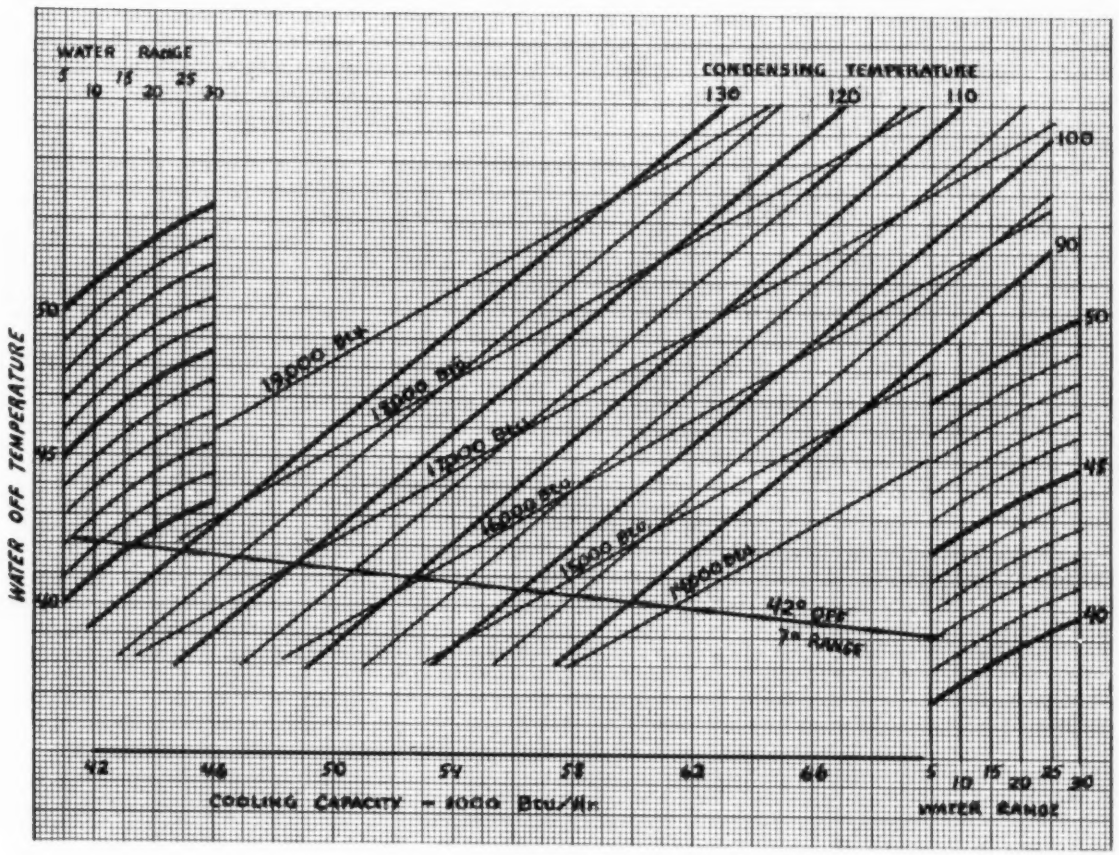


FIGURE 1 (above)
Heat Pump Performance Data

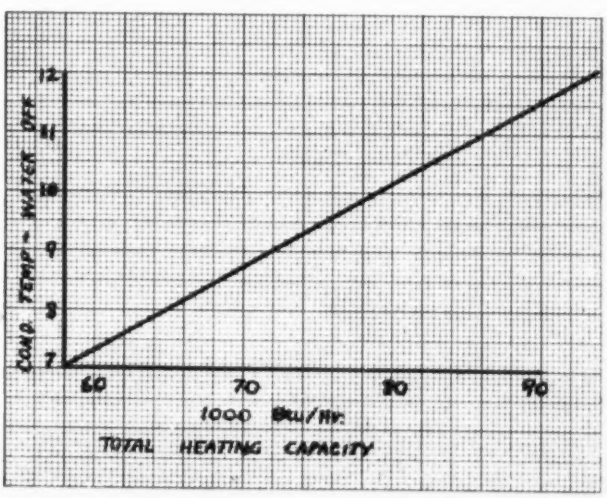


FIGURE 2 (right)
Operating Water Temperature

(Complete directions for the use of these graphs in calculating equipment requirements for any heat pump installation are contained in the article which commences on the facing page.)

chart on the bottom scale at a value of 65,800 Btu/hr. From this point follow up until you intersect the curve, and then read left to the vertical scale. The value here is 8.2 degrees, which is subtracted from the condensing temperature to obtain the temperature of water off — in other words, the water available for heating.

To obtain the temperature of the water leaving the condenser, subtract the value obtained in the preceding step (8.2 degrees) from the condensing temperature of 120 F which will give you 111.8 F water temperature.

Size Pump Properly

We know that in normal hot water heating practice our closed circuit will operate on a temperature differential or range of from 10 to 12 degrees. Assuming that we have a 12-degree range, we can size the pump for the system by the same formula used on the open circuit.

As we already know the total amount of heat available for the system will be 65,800 Btu, our formula will be:

$$\frac{65{,}800 \text{ Btu}}{12 \text{ (degrees)} \times 500} = 10.9 \text{ gallons per minute}$$

Assuming that the system is using convectors, we can easily select the number and size of convectors we want from tables supplied by the manufacturer. These capacities are normally based on water temperature available in the system.

Select Control Method

Control of the heat pump system is virtually the same as any other hot water heating system. One method is to start the circulator at the command of the thermostat, assuming that the convector fans are in constant operation. An aquastat on the water line leaving the condenser controls the operation of the refrigerating machine and the pump handling the open well water circuit.

Another method of control is to permit the warm water in the closed system to circulate, and to operate the individual convector fans from the thermostat. In this type of system, the warm water may by-pass convectors that are not in use, as in the case of a partially occupied motel. Again the compressor and well water pump are operated from an aquastat installed in the water line leaving the condenser.

As we have pointed out, the heat pump system is predicated on using all of the heat available. For this reason it becomes essential that the lines to the convectors in the building be insulated. The use of electric power, even at 2 cents per kwh does not permit waste of any kind.

Among the somewhat limited number of heat pump installations made to date, those using radiant floor heating have been unusually successful. In this instance it is obvious there is no need to insulate various lines to and from convectors, and *all* the heat generated is transmitted directly to the building. Also, the relatively low water off or operating temperature of the heat pump system precludes the possibility of floors that are too warm, resulting in discomfort and even sore feet. The operating temperature of 112 F is most satisfactory, particularly in areas where the climate is relatively mild.

Methods for estimating the kwh used in the operation of a heat pump will be discussed in this department in a forthcoming issue. It is interesting to observe, however, that in certain representative installations the total cost per season, based on 2-cent per kwh power, has been less than the estimated costs for the same building using 14-cent oil.

While there are certain situations in which the heat pump will operate at a cost disadvantage against other fuels and other methods, when heat pumps are correctly applied in the right applications there is no reason why operating costs should be excessive.

BOOK REVIEW

Title: Automatic Control of Heating and Air Conditioning.
Author: John E. Haines, Vice President, Minneapolis-Honeywell Regulator Co.
Publisher: McGraw-Hill Book Co., Inc., New York.
Price: $6.75.

This volume discusses how automatic controls and heating and air conditioning equipment work together, stressing just those automatic controls used in the heating, ventilating and air conditioning field. The unique control requirements of heating and cooling systems, the special devices obtainable for them, and the methods of combining these devices into control systems are outlined. Practical working examples, rather than mathematical formulas, are used. Clear illustrations show the circuits and devices, as well as the operation and applications of this control equipment.

Basic principles are introduced first. Then the discussion proceeds logically from means of measurement and actuation, through construction and characteristics of representative control devices, to the combination of individual control devices into control systems for heating and air conditioning. In addition, radiant panel heating, a new development in the field, and the necessary controls for this system are given special attention.

OPERATING ROOMS ARE AIR CONDITIONED

The operating and obstetrical rooms of the new Evanston, Ill., Community Hospital are air conditioned for year-round comfort by three Trane horizontal air conditioning units fitted with spray type air washer sections.

The air conditioning was designed for 100% fresh air with dew point cooling. The air washers insure saturation for both summer cooling and winter humidification, and individual reheat for control of sensible temperatures for each of the operating and obstetrical rooms.

On the summer cycle, air is cooled to a constant dew point by passing through a chilled water cooling coil, then through the air washer to assure saturation at the predetermined dew point. The air is then reheated by steam blast heaters to maintain a constant room temperature in each zone.

Sequence is the same during the winter cycle, except that the chilled water coil does not operate for outdoor air temperature below 55 F. During this cycle the air is preheated up to the apparatus dew point and then saturated and reheated.

BUY FROM YOUR REFRIGERATION WHOLESALER

USEFUL LITERATURE On Air Conditioning

To obtain the information described below, simply circle on the postcard in this issue the key numbers of the items you wish to receive. We will forward your requests to the companies concerned.

WOULD YOU LIKE TO KNOW more about heat pumps, what they are, how they work and their applications and advantages? If your answer is 'yes' to that question, you'd better request a copy of the illustrated booklet on this subject presented by General Electric Co.'s Heat Pump Dept. Described in this booklet are applications in a variety of architectural plans, and a question-and-answer section on heat pumps.

Circle No. 101 on Reader Service Card

FOUR TYPES OF COILS, water, blast heat, refrigerant and steam distributing are described in bulletins issued by United States Air Conditioning Corp. Each of the bulletins are similar in that they contain photographs of the coils described in addition to tabulated physical data and drawings showing dimensions. Construction features and sectional illustrations are also included in these 2-color bulletins.

Circle No. 102 on Reader Service Card

AIR HANDLING UNITS for industrial and commercial heating, ventilating and air conditioning applications are described in a 6-page bulletin available from Westinghouse Electric Corp., Sturtevant Div. Detailed installation possibilities are given for central plant air conditioning, exhausting heat fumes or vapors and heating and ventilating requirements where cooling is not needed. Bulletin 1600 also covers sectional construction, thermal and acoustical insulation and maintenance features.

Circle No. 103 on Reader Service Card

INSTALLATION DIAGRAMS showing positioning and plumbing connections are shown for all hot water heating specialties presented in catalogue H-99 offered by Taco Heaters, Inc. Sizes, ratings, capacities and complete dimensions are tabulated for each piece of equipment along with application suggestions and photographs.

Circle No. 104 on Reader Service Card

GENERAL PURPOSE PUMPS manufactured by Hypro Engineering, Inc., are illustrated and outlined in a catalog sheet issued by the firm. Form 2531 contains specifications, shows performance tables for each pump size and illustrates applications of the pump and of various drive assemblies.

Circle No. 105 on Reader Service Card

BELT-CENTER SELECTION for fans and compressors, determination of horizontal distances between shaft centers, and checking equipment clearances is made easy by the belt-center distance calculator developed by Korfund Co. Accurate to $\frac{1}{8}$", the calculator replaces the previously needed calculations by giving the desired information in easy-to-read graph form.

Circle No. 106 on Reader Service Card

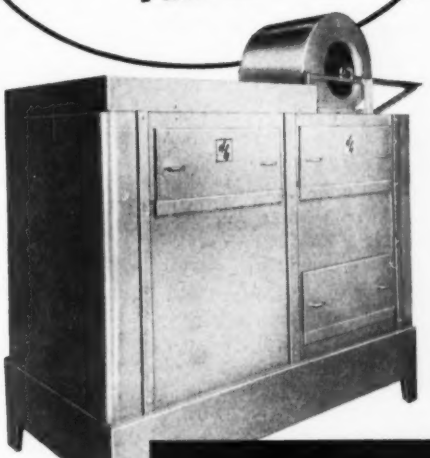
(Turn to page 82 for more Useful Literature)

Born of Experience...

first in 1937 with Blow-Through type evaporative condensers.

PROVED!

BY TROUBLE-FREE PERFORMANCE



PERMA-FAN

EVAPORATIVE CONDENSERS

FIRST to offer a blow-through type evaporative condenser that functioned with continuous, trouble-free performance—DRAYER-HANSON now introduces a newly designed, improved and greatly expanded line of evaporative condensers that utilize the blow-through feature along with design improvements in leak-proof housing construction, hot dip galvanized eliminators, circulating pumps, sump pan drainage and protective finish. In addition, corrosion and scaling of fans are eliminated because of fan location in the supply air stream. These newly designed units are manufactured with the same DRAYER-HANSON craftsmanship and high quality materials that earned the 1937 model a well-founded reputation for continuous and dependable service—even up to this date. Available in sizes ranging from 5 to 60 tons at 78°W.B.

For further information, write for free catalog, or consult your DRAYER-HANSON Agent today!

LONG *established in commercial refrigeration and air conditioning, DRAYER-HANSON offers a complete line of commercial refrigeration and air conditioning products.*

dh SINCE 1910

drayer-hanson

INCORPORATED

3301 MEDFORD STREET • LOS ANGELES 63 • CALIFORNIA

Circle No. 62 on Reader Service Card

WHAT'S NEW...

in Air Conditioning Equipment

For further information on any of these products, simply circle on the postcard provided in this issue the key numbers of the items in which you are interested. Your requests will be forwarded directly to the companies concerned.

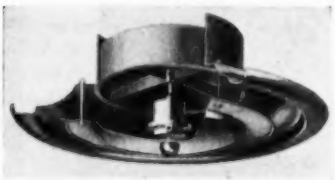
(For more NEW PRODUCTS turn to page 86)

Air Diffuser

Product: Thermostat controlled air diffuser.

Manufacturer: Connor Engineering Corp., Danbury, Conn.

Features: Pneumatic motor, remotely controlled by a thermostat,



regulates damper movement and resulting air volume in this ceiling air diffuser. This diffuser was specially designed for air conditioning systems serving zones having variable heat loads, such as areas subject to changing sun effect, fluctuating occupancy, office layout revision, etc. Sleeve damper moves up and down without enlarging or constricting neck area. Regardless of damper position, the performance of the diffuser is unaffected.

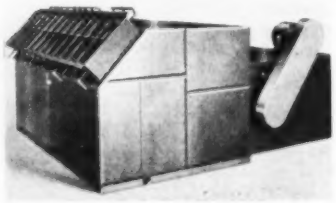
Circle No. 131 on Reader Service Card

Air Conditioner Line

Product: Type B Multi-zone air conditioners provide both cooling and heating from a single unit to any number of separate conditioned areas, each with individual temperature control.

Manufacturer: United States Air Conditioning Corp., Minneapolis, Minn.

Features: Particularly adapted to multi-room building applications where independent and variable cooling and heating loads are encountered. Equipment is available in four models, designed to serve up to 12 to 16 separate zones and with capacities from 7,500 to 18,000 cfm. Sectional construction consists of filter, blower, heating coil, cooling coil and multiple zone mixing damper sections. Blow-through type units have air leaving the fan discharge and passing from the cooling and/or heating coil to the multiple zone damper section from which it is discharged through as many separate air streams as required for the individual zones. Mixing dampers for each zone operate independently, enabling independ-



ent regulation for each zone and separate air stream, whether for heating or cooling. Heating or cooling coils and dampers act as a bypass in those seasons when only one or the other is used. Cooling coils for use with water or direct expansion refrigerant are furnished in any number of rows of tubes deep required. Standard steam coils, steam distributing tube coils, and water coils are available for heating. With automatic temperature control, a separate damper motor, either pneumatic or electric, can be used for each set of multi-zone dampers. These damper motors are operated from a zone thermostat located in space conditioned and served by the required zone. Summer-winter change over is not required as dampers operate in the same manner and direction for both heating and cooling.

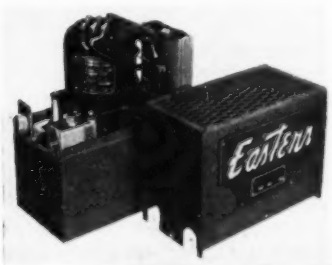
Circle No. 132 on Reader Service Card

Condensate Disposal Unit

Product: Model No. 3 type 100 condensate disposal unit.

Manufacturer: Eastern Industries, Inc., New Haven, Conn.

Features: Unit is completely automatic, has mercury switch control, and is designed to remove hot or cold condensate fluids from the brass receiver tank and pump it to an outside drain. Simple to install in air conditioning units. Rust proof construction. Unit has a heavy duty ball bearing induction type motor. Unit measures 5⅛" wide x 10" long



by 11¾" high, weighs 23 lbs. Tank capacity of approximately 0.8 gal. Bronze centrifugal pump delivers approximately 4½" gpm at 0 psi and shut off of 12½ psi. Single phase, 60 cycle, 115 volt, 1/40-hp, 3450 rpm motor is totally enclosed is a ball bearing, capacitor start motor. A mercury switch, operated by a float, is so set that the pump will eject approximately 0.4 gal. of condensate at each operation. A check valve built into the outlet prevents the outlet line from drain-

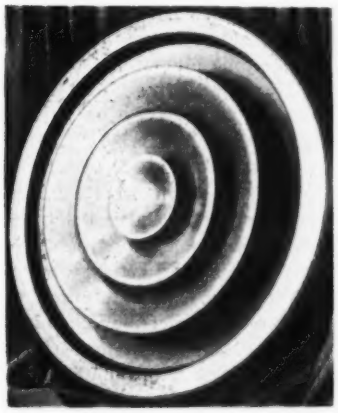
ing back into the tank. Unit is provided with an opening for attachment of BX cable to the motor. All wiring is enclosed in the unit.

Circle No. 133 on Reader Service Card

Ceiling Diffusers

Product: Line of "Aerofuse" type "P" ceiling diffusers.

Manufacturer: Tuttle & Bailey, Inc., New Britain, Conn.



Features: Line consists of five diffuser types, each designed to meet a specific air delivery requirement. Type "PA" is an adjustable multi-passage diffuser mechanically designed so that air distribution pattern may be varied from horizontal to vertical. Pattern is adjusted by turning center cup of the diffuser. Others in the line include type "PS", stepped-down type, fixed pattern diffuser; Type "PF", flush type, fixed pattern diffuser; Type "PH", flush type, fixed pattern half-round diffuser. Series has matching facial contours on all diffusers and identical number of rings of all sizes and types. To facilitate installation, type "P" diffusers have a removable center ring assembly.

Circle No. 134 on Reader Service Card

Downflow Furnace

Product: Oil downflow furnace designed for use with the G-E Airwall heating system or with conventional ducts and registers.

Manufacturer: Home Heating & Cooling Dept., General Electric Co., Bloomfield, N. J.

Features: Developed for basementless houses, the furnace is factory-wired and assembled. Unit is equipped with a flame detector safety device which shuts down the furnace in seconds if the oil flame fails. Blower and motor are rubber-cushioned to counteract vibration. Entire unit is completely insulated with heat-holding and sound absorbing material. "Spira-Flow" heat exchanger features a baffled surface to give quick heat. Single shaft, self-lubricating motor compressor. Furnace will pass through a 28" doorway and it can be installed in a closet off the living quarters or in a utility room. Unit requires only one inch of clearance on the side and two inches in front and back for closet installation. Available in sizes of 60,000 and 85,000 Btu/h output. Smaller furnace is 21" wide, about 31" deep and 55" high. The larger unit is 25" wide, about 31" deep and 55" high. Ductwork used with the furnace can be installed in the concrete slab or in the crawl space. Furnace has also been designed to work in conjunction with G-E's home cooling unit to provide year-round air conditioning. The

BONNEY TOOLS

Persistent in perfection, refrigeration and air conditioning manufacturers like Carrier, Frick, Norge, York, Refrigeration Corporation of America have revolutionized the processing of food . . . set new standards of comfort.

PERSISTENT IN PERFECTION . . .

Your goal is a perfect job—you realize the importance of refrigeration to the health and welfare of the community. So, only the best of materials, the most careful workmanship, and the finest of tools are good enough for you.

Perfection is the standard to which all Bonney tools are made: wrenches, sockets and attachments, special refrigeration tools. Mechanics call them America's finest—unmatched for lightness, strength, balance, and precision.

Bonney tools are the pride of the men who make them . . . the pride of the men who use them.

BONNEY FORGE & TOOL WORKS • ALLENTOWN, PENNSYLVANIA

Circle No. 65 on Reader Service Card

home cooling unit can be installed at the same time or added later at the convenience of the home owner.

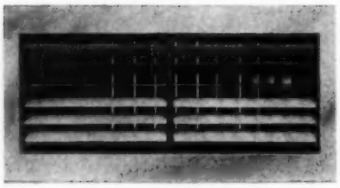
Circle No. 135 on Reader Service Card

Air Register

Product: Four-way Airfoil register No. 227.

Manufacturer: Titus Mfg. Corp., Waterloo, Iowa.

Features: Register combines a four-way directional grille with opposed blade dampers. This provides



maximum directional control and positive volume control. The apposed blade dampers supply distribulation of air to the entire grille face. Frames are heavy gauge cold-rolled steel, are of one piece construction. Border has 1¼" beveled edge. Airfoil-design louvers section is solid and streamlined in appearance. Louver depth is ¾". Rubber gasket of ¼". Finished in gray lacquer primer. Other finishes obtained at slight extra cost. Front louvers are individually adjusted and damper blades in the rear are key operated.

Circle No. 136 on Reader Service Card

Heating Controls

Product: Line of simplified home heating controls for all makes of domestic oil burners.

Manufacturer: General Electric Co., Appliance Control Dept., Schenectady, N.Y.

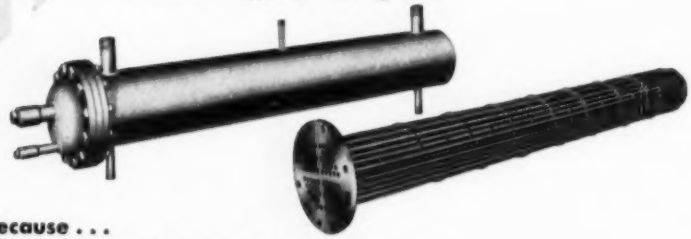
Features: Line includes nine devices: room thermostat, master control with bimetallic helix, flame detector and companion master control, transformer relay, fan and limit control, temperature limit control, water immersion temperature control and a steam pressure control. All may be mounted in any position without leveling. Room

thermostat may be calibrated without tools, has dial for adjusting time cycle to home heating conditions. May be converted to automatic day-night thermostat by adding ordinary radio resistor and time-switch clock. Stack-mounted master control with bimetallic helix requires no adjustments. Flame detectors shut off oil burners in 4 to 7 seconds in case of flame failure. Nichrome and quartz detector rod is sensitive to 30° temperature change. Master control is factory calibrated, has recycling feature for temporary flame failures. Transformer relay operates a line-voltage load from a low voltage thermostat or other control. For warm air furnaces, fan and limit control protects against excessive bonnet temperatures, has a summer switch

BETTER COOLING with Taco

"CONTROLLED VELOCITY" CHILLERS

1. Improved heat transfer
2. Rapid response to Thermal Expansion Valve
3. No oil logging and slop over



Because . . .

Taco's "Controlled Velocity" Tube Bundles . . .

Carry *all* incoming liquid to the top of the Chiller in the first pass.
Provide constant forward movement of *all* refrigerant and oil.
Prevent accumulation of liquid (refrigerant or oil) in any part of the Chiller.

And because . . .

Taco's "Controlled Velocity" Heads . . .

Agitate oil and liquid refrigerant, at each head pass, with a constant stream of expanding gas.
Provide unretarded flow of refrigerant.
Eliminate "traps" for oil and liquid refrigerant.

For full information and Taco's "pinpoint" Selection Charts, write for Bulletin CWF.

137 SOUTH STREET PROVIDENCE 3, R. I.

Circle No. 64 on Reader Service Card

permitting fan cooling in hot weather. Also for warm air furnaces is temperature limit control with easily removable temperature dial stops. Water immersion temperature control has dry well which protects helix. Entire unit can be removed without tools. Steam pressure control is available for standard male and female compression fittings in any range of pressures.

Circle No. 137 on Reader Service Card

Oil Relief Valve

Product: Piston-type oil relief valve for regulating pressure on the firm's series "CF" gas-oil burners.

Manufacturer: Eclipse Fuel Engineering Co., Rockford, Ill.

Features: Valve eliminates chattering and pulsation noises through use of a cylindrical steel piston which closes the port with quick positive shearing action, thus stopping noises commonly caused by valves with disc seats. Pressure in the valve is closely regulated by adjusting tension of the spring inside the piston. Five different spring sizes permit a wide range of pressures from 0 to 500 lbs. Valve spring and piston are easily removed for field servicing without dismantling entire valve. Relief valves are available in four sizes from ⅜ to 1" port.

Circle No. 138 on Reader Service Card

CENTRAL SYSTEM COOLS SHOPPING CENTER

A central air conditioning and heating system to be operated and maintained by the owner is being installed in Bishop's Corner Shopping Center under construction in West Hartford, Conn.

The central system is being provided as the major feature of an unusual program of services and facilities for the three-story store and office building in the 16-acre retail center.

The new unit features a dramatic multi-level plan with first floor stores facing the garden level and the second floor space fronting on the center's main parking area. The third floor contains office space.

Each store and office tenant on the three main floors will have independent thermostatic control of temperature in his space. The basement area will be furnished with a supply and exhaust ventilating system.

The air conditioning system, designed by Harry H. Bond, consulting engineer, will operate from a 300-hp centrifugal compressor providing chilled water to five unit air conditioners on each of the store levels and three units in the office space. From one to four stores, depending on the area involved, will be served by each of these units through a system of ductwork equipped with reheat coils to permit individual temperature control. For winter heating the same units will be supplied with steam from two boilers.

During the heating and cooling, 15% fresh air will be introduced into the system directly through the air handling units. In moderate spring and fall weather, 100% outside air will be provided.

Condenser water will be cooled by a cooling tower located with the building's elevator machinery in a common rooftop enclosure.

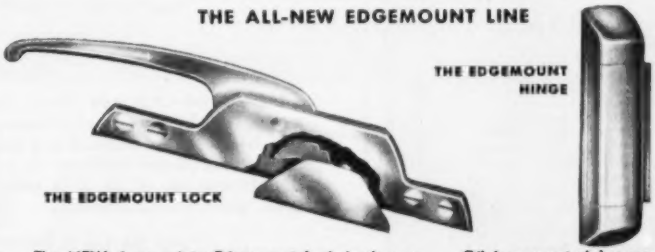
Features that spell value...

Grand Rapids Brass

Refrigerator Hardware

Whether for original equipment or replacement, Grand Rapids Brass locks and hinges provide a rugged, handsome finishing touch that spells quality and value. And they cost no more. That's why leading manufacturers and jobbers specify Grand Rapids Brass. You can be sure with any Grand Rapids Brass lock—when it trips . . . it grips!

THE ALL-NEW EDGEMOUNT LINE



The NEW, heavy-duty Edgemount Lock is chrome-plated, operates easily, installs quickly. Surface-mounting eliminates mortising of wood or stamping. Fully reversible lock mounts on either side of door, handle up or down. Strike adjustment 7/16" to 5/8".

Oil impregnated bronze bushings in this hinge provide two-way protection against tension and thrust. Requires no lubrication. A heavy-duty hinge.

THE POPULAR SURFACE-MOUNTED LINE

Write for Complete Illustrated Information

Grand Rapids Brass Company

DIVISION OF CRAMPTON MANUFACTURING COMPANY
GRAND RAPIDS, MICHIGAN

Suppliers to the Nation's Leading Automotive, Refrigeration and Plumbing Manufacturers

Circle No. 65 on Reader Service Card

take a closer look at...

United WIRE's

UDD

COPPER REFRIGERATION TUBING

UNITED means that it's the product of 83 years of precision tube mill experience and that it's produced on new equipment, by new processes and fine quality controls unequalled anywhere within our industry . . . that it is better quality, has extra values . . . without expectation or demand and at no extra cost.

DEOXIDIZED means that all oxides, grease, dirt, slivers, copper dust and foreign substances common to copper tubing have been 100% removed by special processing to prepare it for use, as received, in the finest and most delicately balanced mechanical equipment or control instruments.

DEHYDRATED means that all moisture has been removed prior to sealing and Trade Marking.

Putting them all together . . .

"UNITED DEOXIDIZED DEHYDRATED"

means finer, the finest, Copper Refrigeration and Air-Conditioning Tube made anywhere. UDD will earn your respect and completely justify your confidence in regularly specifying it.

UNITED WIRE
& SUPPLY CORPORATION
PROVIDENCE, RHODE ISLAND

SALES OFFICES

New York, Rochester, Minneapolis, Chicago, Lansing, Mich., Pittsburgh, Hartford, Conn., Akron, Philadelphia, Los Angeles, Springfield, Mass.

Circle No. 66 on Reader Service Card

The publications listed below are available to readers without charge. Simply circle on the postcard in this issue the key numbers of the items you wish to receive. Your requests will be forwarded directly to the companies concerned.

A MOTOR SERVICE PLAN for fractional and integral-hp motors and generators is described in a four-page, two-color bulletin presented by General Electric Co. Booklet GEC-972 explains types of service provided, service warranties, motors covered by the plan, and fhp motor factory repair service. Authorized service stations (105 in U.S.A. and 22 in Canada) are listed.

Circle No. 111 on Reader Service Card

TWO FLAVORS, TWO COLORS of soft ice cream at once is a feature of the "Retailer" freezer which is described and illustrated in a 6-page folder available from Cherry-Burrell Corp. The folder contains illustrations of two sizes of units and component parts are also illustrated. A diagram showing placement of the refrigeration equipment and flow direction of liquid and gaseous refrigerant is on the back cover.

Circle No. 112 on Reader Sevice Card

WHEN YOU PURCHASE sheaves and belts, you'll find useful a copy of the comprehensive 56-page catalog on "Vee-Tex" drives issued by Pyott Foundry & Machine Co. This catalog contains selection tables for both V-belts and sheaves, as well as dimensional illustrations of the various types of power transmission equipment made by the company.

Circle No. 113 on Reader Service Card

SAFE-GUARD LATCHES which eliminate the possibility of accidentally or intentionally locking a person inside a walk-in refrigerator are featured in a four-page brochure available from Kason Hardware Corp. In addition to the information and illustrations of the K-55 safety-latch, the brochure lists brass, iron, and steel hinges.

Circle No. 114 on Reader Service Card

BRASS FITTINGS. The complete line of refrigeration fittings, valves and accessories, charging lines, driers and strainers plus tube working tools are described in a 20-page catalog offered by Madden Brass Products Co. Style and catalog numbers, dimensions, prices, and weights are included with illustrations of the various fittings and accessories.

Circle No. 115 on Reader Service Card

MERCURY-BULB instrumentation down to —30°F is described in bulletin 109 presented by Partlow Corp. This 2-color, 4-page bulletin describes refrigeration controls which are based on the mercury-bulb temperature. Ranges included are from 120 to —30°F, with sensitivities of plus or minus 1½ degrees. Recording, indicating, or non-indicating instruments are listed.

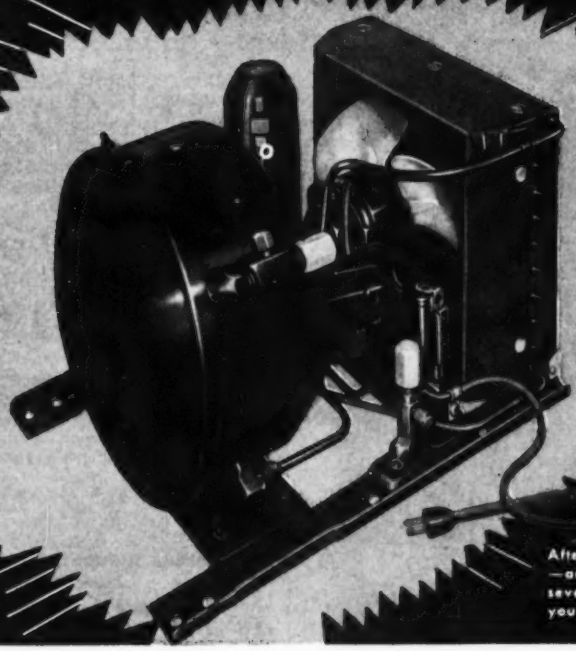
Circle No. 116 on Reader Service Card

(More Useful Literature on page 84)

Introducing

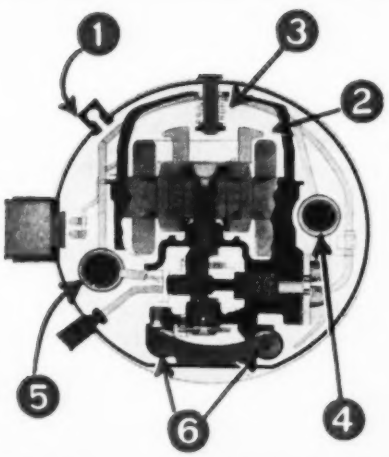
KELVINATOR'S HERMETICALLY SEALED INTERNALLY-MOUNTED CONDENSING UNITS!

Costs Less! More Efficient! Quieter! Easier To Service!



Weighs Less! More Compact! Easier To Handle!

After 5 years of painstaking engineering —and one year of field testing under severest conditions—Kelvinator brings you the newest-of-all condensing units.



Here's why this new Kelvinator is the finest piece of refrigeration mechanism you can buy . . .

1. Suction at the *top* of the dome directs cool refrigerant over motor windings and compressor body. This makes lower operating temperatures and *more efficient* cooling possible. 2. Fan attached to motor rotor whirls refrigerant to inside walls of dome to get rid of heat *faster*. Further efficiency. 3. Compressing mechanism "floats" inside dome—rather than being firmly attached to it. Makes operation practically *noiseless*. 4. Suction muffler and discharge muffler (5) further contribute to quietest possible operation. 6. Multiple springs are twin stabilizers that absorb torque reactions. *Less vibration.*

In addition, the new internally-mounted Kelvinator eliminates shipping bolts. It's light in weight, more compact, yet has more-than-ample capacity. It's completely protected against abnormal handling and operating conditions . . . and has the most foolproof pressure-feed lubricating system. The new plug-in type relay makes it the easiest unit to test and service. On top of all this, it's *lower* in cost than externally-mounted units. Available from ⅙ thru ½ H.P. . . . For full information and prompt service, contact your nearest Kelvinator distributor or Zone Office.

Manufacturers of Commercial Refrigeration for 30 Years

Kelvinator

Division of Nash-Kelvinator Corporation, Detroit 32, Michigan

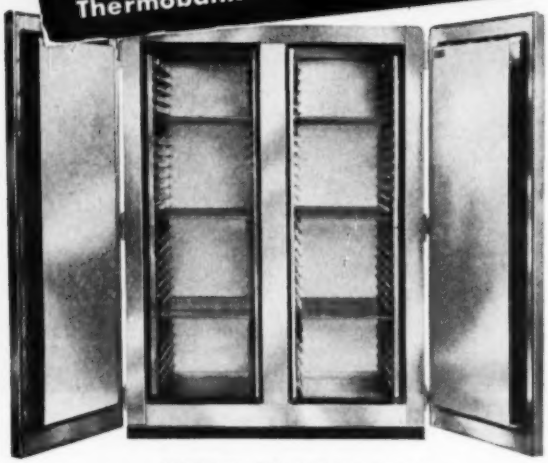
Circle No. 67 on Reader Service Card

made by experts

for bakeries, restaurants, hotels, institutions

MODEL FA-35-S
Completely Self-Contained

STA-KOLD UPRIGHT FREEZERS
Complete with Kramer Thermobank Automatic Defrost



MODEL FA-47-R—Remote
Capacity 47 cu. ft.

Spoilage and losses are eliminated with the dependable Kramer Thermobank Automatic Defrost system... no ice scraping... no long waits for ice to melt. All foods easily accessible. Furnished with adjustable wire shelves for regular frozen food storage.

STA-KOLD features a complete line of self-contained and remote model Dough-Retarders.

ORIGINATORS AND PIONEERS OF ALL-METAL CONSTRUCTED STAINLESS STEEL COMMERCIAL REFRIGERATORS

For complete information write for catalog

STA-KOLD PRODUCTS

Division of
VICTORY METAL MANUFACTURING CORP.
1300 SOUTH FRONT STREET
PHILADELPHIA 47, PA.

Direct Factory Representatives and Dealers Throughout the World

Circle No. 68 on Reader Service Card

USEFUL LITERATURE . . .

Continued from page 82

USE OF CALCIUM CHLORIDE in refrigeration, its properties, and its control as the brine medium in refrigeration and ice manufacturing systems is covered in a 64-page edition of Technical & Engineering Bulletin #4 recently issued by Solvay Process Div., Allied Chemical & Dye Corp. This sixth edition contains many graphs, charts, and tables, plus a section giving specific data on various industrial and commercial applications of calcium chloride refrigeration brines.

Circle No. 117 on Reader Service Card

FREEZER SECTIONS made by Industrial Mfg. & Engineering Co. are described and illustrated in a 4-page, 2-color bulletin available from the company. A cut-away drawing, largely magnified, shows a typical "Lotemp" coil section and another drawing illustrates installation with a drip trough attached. Engineering information and complete specifications are also given.

Circle No. 118 on Reader Service Card

INDUSTRIAL THERMOMETERS, both mercury-in-glass and bimetallic types, are featured in Bulletin E-2, a 16-page catalog presented by Precision Thermometer & Instrument Co. Discussed is the use of mercury-in-glass thermometers as thermal protective devices, with explanations of how warnings of over or under temperatures are given. Also included is a complete listing of thermometers for installation in ducts, piping, pressure vessels, etc.

Circle No. 119 on Reader Service Card

FASTENING INSULATION around piping with steel strapping is discussed and illustrated in a 4-page bulletin released by Acme Steel Co. The most suitable type of strapping for each particular job is explained and sizes, weights and types of strapping are tabulated. Drawings illustrate models of stretchers and sealers available. Descriptions of each model are included with step-by-step procedures for fastening insulation. Photos show domestic and industrial applications.

Circle No. 120 on Reader Service Card

THERMOSTATIC SWITCHES which open and close a circuit on .2° F with accurate repetition are described and illustrated in a mailing piece obtainable from Scaico, Inc. Describing the "Tempswitch", this release contains 25 suggested applications for the three types described (conduction, convection and immersion). Specifications and engineering data are listed. A cut-away drawing shows operating features.

Circle No. 121 on Reader Service Card

TUBE FITTINGS and pipe fittings with an alloy spring steel sleeve are featured in a 28-page catalog available from Flodar Corp. Also covered in catalog 553 are instructions for making perfect joints with illustrations showing right and wrong installation methods. Engineering specifications and sectional views of both flare type and no-flare fittings are included.

Circle No. 122 on Reader Service Card

(See page 77 for Air Conditioning Literature)

FOLLOW Servel SUPERMETIC'S

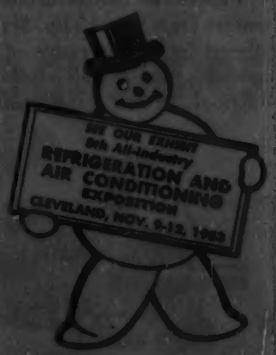
FIVE-WAY SMOOTHER PATH TO PROFITS!

EASIER

to install—saves time!

TROUBLE-FREE

performance builds good will—
more sales!



COMPLETE LINE

sizes for every commercial refrigeration use—
¼ to 3 h.p.—enables you to meet the needs
of every prospect!

QUICK AVAILABILITY

Servel Supermetics and complete installation supplies are stocked by your conveniently located Servel authorized wholesaler!

FACTORY-BACKED

Servel's low-cost liberal warranty offers broadest protection for both you and your customers!

ASK your wholesaler for full details or write Servel, Inc., Electric Refrigeration Division, Evansville 20, Indiana.

Servel

THE NAME TO WATCH FOR GREAT ADVANCES
IN REFRIGERATION AND AIR CONDITIONING

Circle No. 69 on Reader Service Card

NEW PRODUCTS

For further information on any of these products, simply circle on the postcard provided in this issue the key numbers of the items in which you are interested. Your requests will be forwarded directly to the companies concerned.

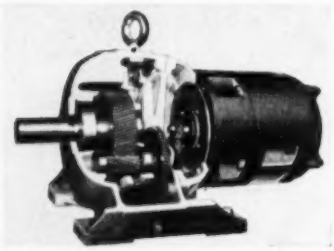
(For Air Conditioning Products turn to page 78)

Gearmotor Series

Product: Line of integral gearmotors.

Manufacturer: Century Electric Co., St. Louis, Mo.

Features: Series included gearmotors from 1 to 15 hp. Motors are offered in a wide range of speeds, in single, double and triple gear reductions. In this series, gears meeting

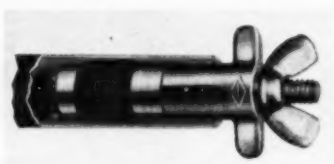


ing A.G.M.A. Class I, II and III specifications can be had to fit varying load requirements. Motors are available with constant or variable speeds and with protective frames to operate under most conditions.

Circle No. 141 on Reader Service Card

Tubing Test Plugs

Product: Test plugs for applications where temporary shutting off of the end of a tube is desired.



Manufacurer: Imperial Brass Mfg. Co., Chicago, Ill.

Features: Plugs are especially convenient for use in refrigeration, radiant heat and similar installations. Plugs enable testing of tubing installations before they are put into service or when trouble shooting for leaks. Plug is inserted in the end of the tube and the wing nut is tightened. This expands the synthetic rubber portion of the plugs which seals the tube. Plugs will hold pressures up to 100 lbs., and can be used on all liquid or gas tubing lines except those where material carried in tubes would deteriorate synthetic rubber. Plugs are available in five sizes: ¼, ⅜, ½, ⅝ and ¾" O.D.

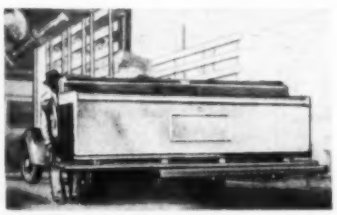
Circle No. 142 on Reader Service Card

Hydraulic Lift Gates

Product: Hydraulic "Pick-Up" lift gate for ½ and ¾-ton trucks.

Manufacturer: Anthony Co., Streator, Ill.

Features: Powerful twin hydraulic cylinders attach directly to



gate. There are no chains, cables or cranks. Unit operates from truck engine through power take-off pump combination, or when transmission has no provision for a power take-off, by fan belt driven pump equipped with throwout clutch. Positive single lever control raises, lowers, or holds gate at any elevation, stops automatically at ground and floor level. Safety hooks lock gate up when not in use. Bypass valve prevents overloading. Self-contained mechanism does not interfere with canopy top, sign panels, spare tire or bumper. Lifts and lowers in seconds, capacity is 800 lbs. Unit weighs 324 lbs. complete, adds about 10% more payload space.

Circle No. 143 on Reader Service Card

Meat Cases

Product: "Serv-Master" line of self-service meat cases.

Manufacturer: Weber Showcase & Fixture Co., Inc., Los Angeles, Calif.

Features: Extra wide display area with racks adjustable in three positions and very deep display deck for bulk display of specials.

Line is available in 6 and 10′ lengths in single duty models and in 10′ lengths with top display. A 10′ double-duty model with rear storage area raised well off the floor for easy access is also available. All models are available without superstructure or with any of five types of superstructure featuring either slanting mirrors or merchandising shelf.

Circle No. 144 on Reader Service Card

Squeak Stopper

Product: "Rub-Lub" liquid rubber lubricant for application to refrigerator door liners.

Manufacturer: Permatex Co., Brooklyn, N. Y.

Features: Usually thought of as silent, many rubber parts in refrigerators, freezers and coolers can develop squeaks and groans unless properly lubricated. A quick application of this lubricant to squeaky door liners with the handy applicator-top stops squeaking for lengthy periods. This colorless liquid, easily applied, is effective for rubber refrigerator door parts and other rubber components used in industrial, commercial and household equipment.

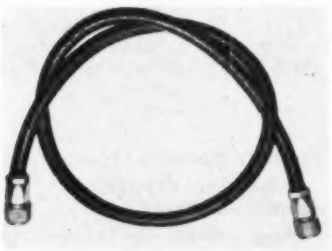
Circle No. 145 on Reader Service Card

Charging Line Couplers

Product: Reusable quick couplers for use in making quick and inexpensive "Freon" and methyl chloride charging lines.

Manufacturer: Resistoflex Corp., Belleville, N. J.

Features: New method of making charging lines eliminates necessity of stocking various lengths to cover all needs. Mounting couplers



on any length of hose is a matter of three steps: first, nut is threaded on the hose; Second, the shell is threaded onto the nut; and third, the two are tightened with the aid of an end wrench and vise, or with just two wrenches. Couplers are easily removed and used over and over again to make other charging lines. Bulk hose is light, very flexible and easy to handle.

Circle No. 146 on Reader Service Card

Display Cabinet

Product: Model OG-19F self service low temperature display cabinet.

Manufacturer: Ace Cabinet Corp., New Bedford, Mass.

Features: Low wattage heating element installed in the rubber

moulding around the front of the Thermopane retards condensation. Thus, the front of the cabinet, approximately 50% glass, assures good visibility of the interior at all times. Large angle mirror in the superstructure reflects the image of the contents. Five full color illustrations in superstructure add to eye appeal. Heavy duty ¾-hp hermetically sealed condensing unit is mounted on "glide-out" track for cleaning and servicing. Additional hi-level refrigerated surface under the superstructure assures uniform temperatures. Entire cabinet is one-piece, all-welded steel, rust proofed and finished in double baked white enamel. Stainless steel top. Capacity is 19.2 cu. ft. Dimensions are 82" long, about 31" wide and 70" high.

Circle No. 147 on Reader Service Card

Refrigerator Line

Product: Line of remote or self-contained pass-through and standard reach-in refrigerators.

Manufacturer: Koch Refrigerators, North Kansas City, Mo.

Features: Sliding glass door refrigerators, models 5845 and 5870, are available in 45 and 70 cu. ft. sizes. Doors framed in polished aluminum and plastic, are top suspended, easy rolling, and tight sealing. Double Thermopane glass set in rubber. Exterior fronts and ends and entire interior are finished in

Only the NEW PA 400 gives you all these qualities!

Comparison of PA 400 and competitive desiccants

	PA 400	Competitive Desiccant A	B	C
High Reserve Capacity	yes	no	no	no
Pre-attrited	yes	no	no	no
Low Pressure Drop	yes	yes	yes	no
Adsorbs Water Physically instead of Chemically	yes	no	yes	yes
Non-dusting	yes	no	no	yes
Adsorbs Acids	yes	no	yes	yes
Will dry Freon 12 to below 2 ppm at 120°F	yes	no	yes	yes

*T.M. Reg. Applied For

And PA 400 has up to 98% increased moisture adsorption capacity. See your jobber today or write.

SEE EXHIBIT OF THE NEW PA 400 AT
Booth 212
8th All Industry Refrigeration and Air Conditioning Exposition
Cleveland Public Auditorium
Cleveland, Ohio
Nov. 9 thru 12, 1953

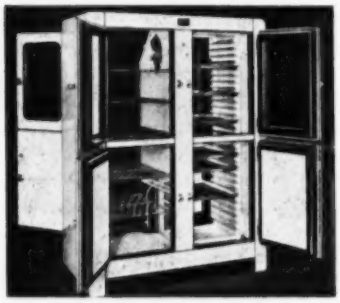
Progress Through Chemistry

THE DAVISON CHEMICAL CORPORATION
Baltimore 3, Maryland

Producers of: Catalysts, Inorganic Acids, Superphosphates, Phosphate Rock, Silica Gels and Silicofluorides. Sole Producers of DAVCO® Granulated Fertilizers.

Circle No. 70 on Reader Service Card

white porcelain with stainless steel exterior trim. Stainless steel exteriors and full interiors are optional. Similar 25 cu.ft. model, finished inside and out in enamel, with porcelain floor is also available. Standard remote and self-contained



models in series 3800 and 2800 are available in pass-through arrangements, with doors front and back. Fronts, ends, doors, and interiors are finished in white porcelain. Stainless steel exteriors, interiors, triple glazed doors and pan slide inserts are optional. Equipped with lights independently controlled from either side of cabinet. Series 6800 reach-ins are available in 25 cu.ft. capacities, have hinged doors. Models in this series are finished in enamel on exterior fronts and ends and interior walls. Stainless steel exteriors and interiors are optional, as are triple glazed glass doors.

Circle No. 148 on Reader Service Card

Cleaning Gun

Product: "Carco" triple-purpose sand blast, liquid and air cleaning gun.

Manufacturer: C. A. Roesch & Co., Los Angeles, Calif.

Features: Precision built gun for cleaning small parts and surfaces with sand liquid or air operates on air pressures of 75 lbs. and up. Maximum efficiency for sand blasting is obtained with air pressures of 100 to 140 lbs. The gun has a light, strong metal body with a precision built valve and trigger assembly. It is equipped with a hardened steel jet and nozzle. The complete kit contains the gun, three extra hardened steel nozzles, extra hardened steel jet, glass sand container with cap, machined brass fittings, 3-ft. rubber hose and a wrench for removing and installing the jet.

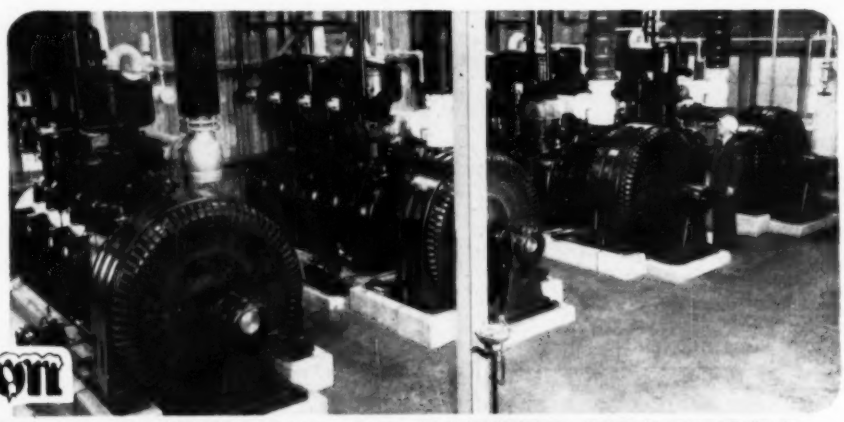
Circle No. 149 on Reader Service Card

Waitress Stations

Product: "Beverly" and "Coronado" models of stainless steel waitress stations.

Manufacturer: Stainless Food Equipment Co., Newark, N. J.

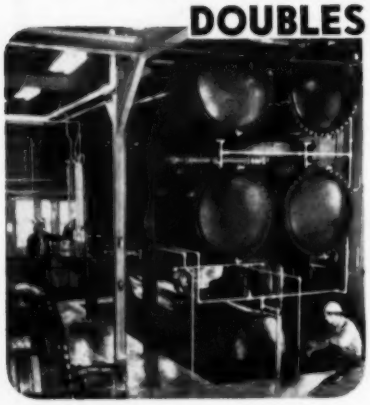
Features: Two models differ only in the water station, which is mechanically cooled by ⅓-hp compressor and 20-gal. instantaneous cooler in the "Beverly" and ice-cooled in the "Coronado" with capacity for 125 lbs. of ice. Both mod-



TRADE FRICK MARK®

Refrigeration

DOUBLES PRODUCTION OF RUBBER REACTORS



Synthetic rubber plants all over this country, and in Canada, are finding Frick special coils and controls the answer to the problem of cooling reactors. Vertical pipes flooded with ammonia, inside the reactors, replace sluggish brine jackets with trigger-fast cooling. This exclusive Frick development cuts reactor time in half—an unbelievable achievement!

What is YOUR cooling problem? Whether for process work, research, air conditioning, cold storage, or quick freezing, there's a Frick refrigerating system to suit your needs. Let us submit estimates now on your requirements. Branches and Distributors in principal cities: write, wire, phone or visit

Photos show Frick Ammonia Compressors, with 600-hp. motors; Frick Condensers, Receivers and Purger at Kentucky Synthetic Rubber Corp., Louisville, Ky.

DEPENDABLE REFRIGERATION SINCE 1882

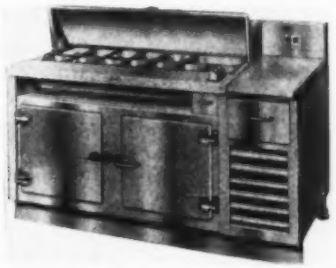
FRICK CO.

WAYNESBORO, PENNA., U.S.A.

Also Builders of Power Farming and Sawmill Machinery

Circle No. 40 on Reader Service Card

els measure 4'8", having following features: 23" long utility section with 4 pitched silver bins, stainless steel bottom and intermediate shelves; 12" bread cabinet, 2 galvanneal lined drawers and 110 volt



duplex electrical outlet; three tumbler storage shelves 20" long x 9½" wide; pastry case 36" long, 14" deep, 17" high; 70" high stainless steel panel backing. Both models have solid one-piece top without joints. Available without superstructure if preferred.

Circle No. 150 on Reader Service Card

Thermometer

Product: Indicating pneumatic control thermometer.

Manufacturer: Industrial Div., Minneapolis-Honeywell Regulator Co., Philadelphia, Pa.

Features: Low-unit-cost controller is available either with direct or reverse-acting "on-off" or limited throttler control units. Actuation is provided by standard vapor or mercury-filled thermal systems. Instrument is 11 x 11 x 4". It is housed in a black die-cast aluminum case with a black phenolic cover. Three reversible mounting clamps permit interchangeable flush or surface mounting on panels of any thickness. Controller is especially suitable for providing automatic control advantages to manually regulated processes.

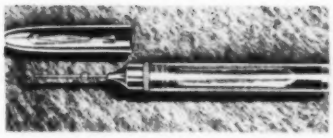
Circle No. 151 on Reader Service Card

Vest-Pocket Oiler

Product: Fountain-pen sized "Oilette" for oiling hard-to-reach places.

Manufacturer: Autopoint Co., Div. of Cory Corp., Chicago, Ill.

Features: Designed to be carried in a pocket, oiler has bronze



metal finish cap with a sturdy pocket clip. Heavy-duty, transparent plastic squeeze barrel holds the oil. Long, thin nozzle lets out one drop at a time when desired. To insure against leakage, the nozzle has a trigger type open-close action. Only when the cap is removed and the nozzle extended slightly can any oil be dispensed. When the nozzle is retracted, no oil can leak out of the oiler.

Circle No. 152 on Reader Service Card

Upright Freezer

Product: Upright "Quickfreezer" with 19 cu. ft. interior.

Manufacturer: Victor Products Corp., Hagerstown, Md.

Features: Unit occupies less than 1 sq. yd. of floor area. Stores 650 lbs. of frozen foods with eye-

You're Always Sure of The Correct Tool with

DURO-CHROME

Refrigeration Tools

72-Piece Complete Set—or Choose a Piece at a Time

Refrigeration service men who want to be sure of doing jobs easier — better — faster, use these Duro-Chrome Refrigeration Tools — each one designed for a specific job. Include range of sockets, hexagon, square and special purpose, with the famous Duro-Chrome Reversible Refrigeration Ratchet and extensions. Also tools to bend, cut and flare tubing, with special flare nut box wrenches to turn flare nuts without distorting the flare joint. The box wrenches, amber handled screw drivers and long type hexagon set screw wrenches include all sizes used on compressors, motors and controls. All complete in green hammerloid sturdy enameled finish metal box, with handy lift-out tote tray. These Duro-Chrome Refrigeration Tools can also be brought separately, if you prefer.

Get Your **DURO-CHROME** Pocket Catalog

Y-422

ASK YOUR DURO JOBBER—*for a free copy of the Pocket-Size Duro-Chrome Tool Catalog; or send 10c in coin, with coupon below, to Duro Metal Products Co.*

MAIL COUPON FOR DURO-CHROME POCKET-SIZE CATALOG

DURO METAL PRODUCTS COMPANY
2649 N. Kildare Ave., Chicago 39, Ill.

Please send my copy of the DURO-CHROME Pocket-Size Catalog for which I enclose 10¢ in coin to cover costs of postage and handling. Address to me, personally.

My Name_____

Address_____

City_____ Zone____ State_____

ALSO MAKERS OF NATIONALLY ADVERTISED DURO POWER TOOLS

Circle No. 72 on Reader Service Card

level accessibility. Automatic temperature control enables quickfreezing without "freezer burn". Four individual inner compartment doors operate on two exterior mounted shelves. Three lower doors can be used as shelves when loading or unloading. Compartments refrigerated by concealed freezing coils. Sides, top and bottom are refrigerated. Electric heater controlled by manual switch for use to minimize humidity condensation. Interior and exterior of cabinet are bonderized for rust resistance and finished in white baked enamel. Chrome finished latch has built-in lock and 2 keys.

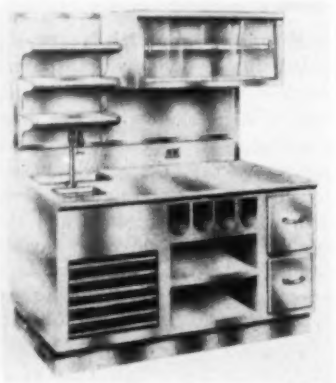
Circle No. 153 on Reader Service Card

Sandwich Units

Product: Line of "Flex-O-Unit" sandwich units for food service establishments.

Manufacturer: Stainless Food Equipment Co., Inc., Newark, N. J.

Features: Refrigeration provided by factory-sealed compressor blower coil assembly, completely self-contained and ready to operate upon plugging into electrical outlet. Available with either 1 or 2 doors and with or without refrigerated



locker drawers, toaster space, bread drawers and water station. Standard length units of 24, 30, 36, 48, 60, and 72" and combinations in 24 and 31" depths. Stainless steel front and top, roll cover and hood, insets, refuse container; laminated maple cutting board, glass fiber insulation and built-in light with automatic door switch.

Circle No. 154 on Reader Service Card

Food Freezers

Product: Model C 14 chest freezer and model F 15 "Won-dor" upright freezer.

Manufacturer: Howard Refrigerator Co., Inc., Philadelphia, Pa.

Features: Chest freezer has two 11" work surfaces on each side of the door for added convenience. Unit is 36" high, 29" wide and 60" long. Capacity of 490 lbs. of frozen foods. Upright freezer has three aluminum shelves on inside of the door. This model stands 63" high, 38" wide and 29" deep. It stores approximately 525 lbs. Both chest and upright freezers have hermetically sealed compressor, red warning light which automatically indicates temperature rise over safety level, and all welded construction. Back of door, on both models, is finished in pastel blue, interiors are entirely finished in aluminum. Chest type has dual purpose chrome handle which serves as a lock with a key and a chrome trimmed light for interior illumination. Equipped with plated steel wire baskets. Upright model has snap action latch, balloon one-piece

The MERIT is "BUILT-IN"
Type GGU
by Aurora
These Type GGU Aurora Side Suction Centrifugal Pumps are employed wherever liquids are used in processing. Discharge may be in any of eight positions. Small amount of special metals required for handling corrosives.
PUMPS "by Aurora" are the product of exclusive builders of fine pumps. Try them. You, too, will like them.
DISTRIBUTORS IN PRINCIPAL CITIES
AURORA Always PUMPS
AURORA PUMP COMPANY
SUBSIDIARY OF THE NEW YORK AIR BRAKE COMPANY
21 LOUCKS STREET, AURORA, ILLINOIS

Circle No. 35 on Reader Service Card

FIVE ICE-FLO MODELS

Sizes from ⅓ h.p. to 1½ h.p. The smallest makes 2520 deluxe size cubes daily. The largest delivers 10,800 per day. Pull out storage cabinets hold from 8 to 12 hrs. production.

THE ORIGINAL Solid-Cube Ice Maker for Hotels, Restaurants, Clubs, Bars, Cafeterias, Schools, Hospitals, Institutions, Drug and Chain Stores.

A DOOR-OPENER to better ice service. Ice-Flo automatically produces sparkling clear, solid, extra-large ice cubes in quantity at point of use. The result of years of research, scientifically shaped Ice-Flo cubes don't mat or stick together. They last longer in drinks and in storage because they are solid.

DEPENDABLE · ECONOMICAL · STURDY

WRITE FOR DETAILED INFORMATION

Esmond Manufacturing Company
ESMOND RHODE ISLAND

Circle No. 85 on Reader Service Card

rubber door gasket for safe, positive door seal. Blue plastic trim insures sealing between interior and exterior, helps protect against condensation around door opening. Exterior finished in white enamel. Heavy density glass fiber insulation used throughout.

Circle No. 155 on Reader Service Card

Chuck and Adapter

Product: Adapter and chuck converts ¼" drill to ½" capacity.

Manufacturer: Goodmark, Inc., Dayton, Ohio.

Features: The ½" chuck with the ¼" adapter converts standard ¼" drills to a full ½" capacity

electric drill. Simply insert the ¼" adapter end into the ¼" chuck and tighten. This enables the user to do ½" work with a ¼" drill. The adapter eliminates the need of having an expensive ½" drill and gives the user two drills instead of one. Can be used on either hand or electric drills of ¼, 5/16, or ⅜" as well as on flexible shafts.

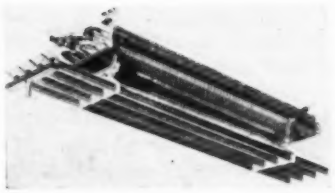
Circle No. 156 on Reader Service Card

Coils and Drip Pans

Product: "Tenneyaire Jr." small size refrigeration coils and drip pans.

Manufacturer: Tenney Engineering, Inc., Newark, N. J.

Features: Equipment is designed for use in dairy boxes, butcher cases, etc. Pans may be purchased separately or in combination with the coils. All units are of aluminum alloy and are equipped with adjustable spring hangers that permit quick installation and cleaning. Standard coil-and-pan combinations are made up for 4, 5, 6, 8, 10 and 12' long display cases. For each case, coils having 6, 8, or 10 tubes



are available with combination pans. For dairy wall-cases, 10-tube coils with combination pans are available for 6, 8, 10 and 12' long cases. Pans can be purchased in any length and from 2 to 10 louvers wide. The Tenney warranty applies to all pans and coil-and-pan combinations.

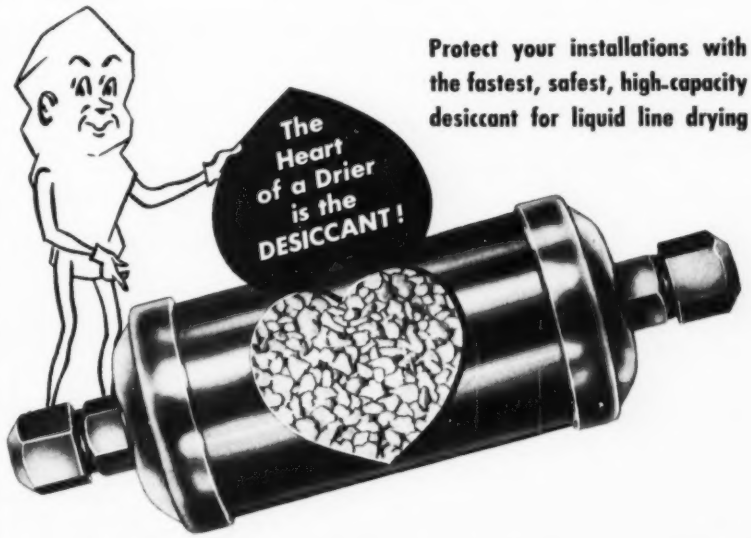
Circle No. 157 on Reader Service Card

Cleaning Tool

Product: Copper fitting cleaning tool.

Manufacturer: Arcee Products, Pawtucket, R. I.

Features: Rubber bonded abrasive is used to give the tool longer



Protect your installations with the fastest, safest, high-capacity desiccant for liquid line drying

Install* McINTIRE DC FILTER-DRIERS *charged with

New **PERMAGRAN*** U. S. PAT. NO. 2,625,516

Hardened, stabilized granular desiccant

- **Positively no powdering or dusting.**
- **Not affected by acids, alcohol, oils, refrigerants or high liquid line temperatures.**
- **For all refrigerants.**

*Trademark Reg. U.S. Pat. Off.

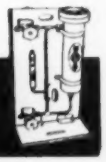
PERMAGRAN gets all the water, fast—dries to minus 60° dew point in a single pass. Absorbs and holds water at all temperature ranges. Does not powder, dust, breakdown or form any by-products. Granular structure provides greater effective surface area, permits free flow. Absorbs 20 drops per cubic inch.
Combined with the effective filtering of DC Filter-Driers, your systems run clean and dry, reducing troubles and service call-backs.

Ask your wholesaler for booklet "My Life Story" or write

The McIntire Company, Livingston, N. J.

Our 28th Year

DFN Trademark DRIERS PERMAGRAN DESICCANT FILTERS—STRAINERS



Circle No. 75 on Reader Service Card

FOR Supersensitive, Dependable, Leak Detecting . . .

Use a

PREST-O-LITE
Trade-Mark
Leak Detector Outfit

Outfit includes leak detector stem, 3 ft. of suction hose, and tank adapter with needle valve for economy and exact flame adjustment.

Even the most minute leaks of halide refrigerant gases can't escape this extremely sensitive, leak detector outfit. Just attach to the valve of a lightweight MC acetylene tank. Detached from tank, this unit fits handily into tool box. Ask your jobber for a demonstration. Or write LINDE AIR PRODUCTS COMPANY, a Division of Union Carbide and Carbon Corporation, 30 East 42nd Street, New York 17, N. Y. In Canada: Dominion Oxygen Company, Limited, Toronto.

GET IT FROM YOUR LINDE JOBBER

"Prest-O-Lite" and "Linde" are trade-marks of Union Carbide and Carbon Corporation.

Circle No. 76 on Reader Service Card

wear and save costs. The abrasive is not only on the outside of the cylinder but is bonded through the rubber for lasting wear. As the abrasive wears, simply tighten the wing nut,

which expands the cylinder and furnishes a new abrasive surface. This tool for ½" fittings always stays to size. Abrasive refills are inexpensive.

Circle No. 158 on Reader Service Card

Wrenches

Product: "Proto" torque-limiting wrenches.

Manufacturer: Plomb Tool Co., Los Angeles, Calif.

Features: Wrenches are calibrated in inch pounds. Capacities of these wrenches are 100-750 and 700-1600 inch pounds. Three of the six available models have a plain head and three have a built-in reversible ratchet head. Drive sizes are ⅜ and ½". Wrenches release at the proper setting and reset themselves automatically. They have no dials, pointers, scales or other projecting accessories to watch or break. All employ an enclosed precision spring as the principal torque controlling element and have an accurate micrometer-type adjustment. Ratchet head models do the work of both a torque wrench and ratchet.

Circle No. 159 on Reader Service Card

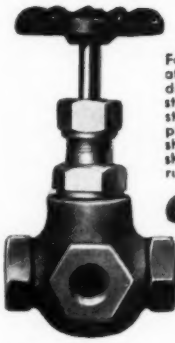
L-O-F APPOINTS SEVEN NEW DISTRIBUTORS

The appointment of a number of distributors for superfine fiber glass insulation has been announced by the Fiber Glass Div. of Libbey-Owens-Ford Glass Co.

Included in the group of new distributors are: Arrowhead Steel Distributors, Inc., Duluth, Minn.; Burroughs Glass Co., St. Louis, Mo.; Cork Engineering & Insulation Co., Boston; Parkersburg Ice & Fuel Co., Parkersburg, W. Va.; General Insulating Co., Miami, Fla.; Houston-Starr Co., Pittsburgh; and Roe-James Glass Co., St. Paul, Minn.

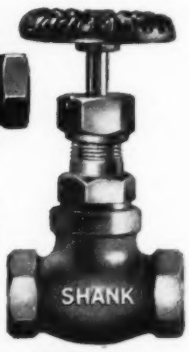
Circle No. 73 on Reader Service Card

shank AMMONIA VALVES AND REFRIGERATION PRODUCTS



3-Way Dual Shut-Off Valve

For use where Refrigeration Codes require dual relief valve installations. Stainless steel stem. Indicator plate on hand wheel shows position of valve shut-off. Completely rust-proofed.



Semi-Steel Shut-Off Valve

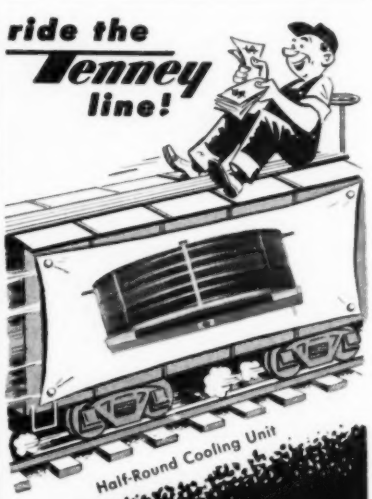
Highest grade non-porous metal—full size ports—clean cut threads. Back seated stem—Shank design base—perfect alignment. Long life packing ring.

IF YOUR JOBBER DOESN'T STOCK—WRITE

CYRUS SHANK CO.

631 W. Jackson Blvd. Chicago 6, Ill.

ride the Lenney line!



just one of our many units that really make money for you with easier, more dependable installations, and customers 100% satisfied!

Interested?

Talk it over with

Lenney ENGINEERING, INC.

26 AVENUE B, NEWARK 5, N. J.

Plants: Newark, N. J., Union, N. J. and Baltimore, Md.

Circle No. 47 on Reader Service Card

PICTURE INSTALLATION . . .

Continued from page 68

for hundreds of people virtually around the clock. Combined, its four giant studios are geared to turn out 22 times as much "production" in a year as the largest Hollywood movie lot.

That explains why flexibility of operation was so important a factor in the design of the air conditioning system which was installed in CBS Television City.

600 Tons of Cooling

The system itself consists of two boilers of approximately 150 hp each and two centrifugal compressors of 300 hp each.

The boilers are controlled manually, with the steam generated being piped to two heat exchangers, The steam supply to the two generators is controlled by an outside air thermostatic adjuster resetting an immersion hot water "Microtherm" modulating thermostat controlling two 4" motor-operated valves.

The two refrigeration compressors are controlled from a chilled water immersion modulating thermostat. The initial compressor is a 5-step wound rotor unit and the second compressor is a synchronous motor unit.

10-Step Control

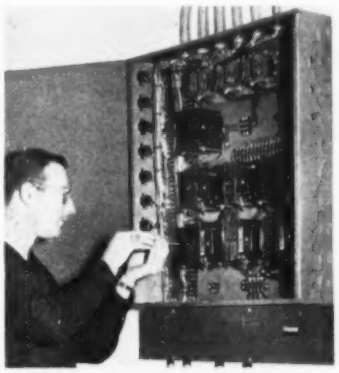
The chilled water thermostat controls a 10-step program switch bringing on the first 5 steps of the wound rotor machine as required. When additional capacity is required, the synchronous driven compressor is started and the last 4-steps of the wound rotor driven compressor are dropped off the line so that only the initial step is on. Then as a further increase of refrigeration capacity is required, the wound rotor machine is again brought up by its remaining 2, 3, 4, and 5 steps of capacity.

These compressors are necessarily interlocked with all safety controls such as oil pressure, bearing temperatures, "Freon" pressures, etc., as required. The synchronous driven compressor has a suction damper which is controlled by a small 100 psi. 2 cfm air compressor. The synchronous driven compressor always starts in an unloaded condition and stops with the suction damper in a full open position so that the compressor comes to a stop in a loaded condition. This serves to stop the compressor more quickly.

There are 16 fan rooms spotted around the building. These are controlled from 10 centralized control panels. Some of these systems are full air conditioning systems. Others are heating and ventilating only.

On the air conditioning systems, a hot plenum modulating thermostat controls a proportioning 3-way valve. A cold plenum modulating thermostat controls a 3-way chilled water valve.

Zone control for the offices is handled by a room thermostat controlling mixing dampers to the respective zones. In areas where there is a very light load, electric strip reheat is added to temper the incoming air. The heating and ventilating systems are controlled by a room modulating thermostat controlling 3-way hot water valves on each coil.



CONTROL CENTERS like this provide maximum flexibility for the air conditioning system in the TV-City.

The air conditioning systems for the four studios are quite different from the systems just described. Each studio has its own fan room located on the roof. The coil section in each fan room consists of three coils arranged vertically, with the upper and lower coils being used for chilled water only. The middle coil is for use with both hot water and chilled water.

A room modulating thermostat controls two 3-way valves, one a hot water valve and the other a chilled water valve, in reversing series.

Off of the auxiliary switches in these proportioning valves, a 3-pole relay is energized. This relay positions three changeover valves. As the hot water valve closes, it is necessary to position these changeover valves to admit chilled water to the middle coil and prevent hot water from mixing with the chilled water of the system.

The control booths for each studio are also handled in a slightly different manner. A remote bulb modulating thermostat is installed on the discharge of the cooling coils controlling a 3-way chilled water valve. A 2-stage room thermostat operates a 2-step strip heater downstream from the cold plenum thermostat. The reason for this is that heating is very seldom needed in these control booths because of the terrific amount of electronic equipment in each booth.

DINHAM CO. TO HANDLE BUSH'S HEATING LINE

R. G. Dinham Co. has been appointed to handle the sales of Bush Mfg. Co.'s heating line. The Minneapolis, Minn., firm will handle sales of products including baseboard radiation, convector radiators, and finned radiation through Minnesota, North and South Dakota and western Wisconsin.

Dinham Co., which has operated since 1941, also represents some of the leading manufacturers of heating and ventilating equipment. C. M. Stevens and Richard Fortney are sales engineers associated with the firm.

BUY FROM YOUR
REFRIGERATION WHOLESALER

The oil that BENEFITS EVERYONE

Distributors, dealers and service men all benefit when compressors are lubricated with *Texaco Capella Oil (Waxfree)* — the oil that helps build business through satisfied customers.

Texaco Capella Oil (Waxfree) assures clean, efficient operation of all types and sizes of refrigerating and air conditioning compressors. It won't precipitate wax in systems even at temperatures as low as minus 100° F. It has outstandingly low haze and floc temperatures, great stability and resistance to oxidation. In addition, *Texaco Capella Oil (Waxfree)* does not foam, is moisture-free, does not react with refrigerants.

There are *Texaco Capella Oils (Waxfree)* in viscosities to meet all requirements. Available in 55-gallon drums, 5-gallon, 1-gallon and popular grades in 1-quart containers — all refinery-sealed to protect their purity and quality.

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Capella Oils (Waxfree)

FOR ALL REFRIGERATING AND AIR CONDITIONING COMPRESSORS

Circle No. 78 on Reader Service Card

THE COMMERCIAL REFRIGERATION and AIR CONDITIONING

APPLICATIONS MANUAL

by Hugo C. Smith

Readers are invited to submit their problems to this department. Each letter of inquiry will be answered personally by the author. All problems should be clearly and completely stated and addressed to: COMMERCIAL REFRIGERATION AND AIR CONDITIONING, Manual Dept., 1240 Ontario St., Cleveland 13, Ohio.

How To Engineer Freezer Jobs In 2 Minutes Using Pre-Calculated Tables and Graphs

WITH the present boom in the frozen food industry it is not unusual for contractors to have several large commercial freezer jobs come into the office within one week. In an effort to cut down the amount of time spent in engineering such jobs, and thus increase the time available for sales work, we have worked out a series of factors and graphs which have proved accurate and reliable for 90% of the installations which will be encountered.

These materials are much faster to use than the standard ASRE method of load calculation. Using these factors and graphs it is actually possible to accurately estimate Btu requirements on large commercial freezers in less than two minutes!

The factors are based on the standard ASRE method at the following conditions: 95 F ambient, zero F room, and heavy service. A 16-hour running time was used in lieu of a safety factor.

Load of lights, men, and sun walls was not included and should be added in those rare instances that they are encountered in a freezer installation.

The outstanding advantages of this system of freezer engineering are: (1) it practically eliminates the possibility of error, by reducing the figure to an extremely simple calculation; (2) it is a great time saver; (3) it makes it possible for load calculations to be completed right on the job; and (4) it automatically brings all installations up to a set standard of capacity.

This last factor is extremely important, for most refrigeration sales engineers have had the distressing experience of checking back on jobs that were engineered to amply fulfill the conditions originally outlined by the customer, only to find that the volume of product had since been doubled or tripled, or that the product was arriving at a much higher temperature than when the job was figured.

For instance, we recently had a customer give us a product load of 1000 lbs per day on a 40 x 10 x 8′ freezer. This room has a cubic content of 2457 cu. ft. Assuming that one-half of this could be used for actual product storage (after allowances for aisle space and head space) and using an estimated 50-lb weight per cu. ft., we arrived at a total freezer capacity of 61,400 lbs (1228 x 50).

The customer told us that his firm was making daily deliveries 5 days per week, so we divided the total load of 61,400 lbs by 5 and arrived at a potential daily product load of 12,280 lbs. The customer said that was silly, and assured us that he just didn't have that much business in his frozen product. Despite this fact, however, we compromised on 10,000 lbs product load and installed the equipment on that basis.

Thirty days after completion of the job, the firm landed a contract with a chain store outlet calling for 50,000 lbs of frozen product a week. This new business, in addition to their other regular orders, brought their total sales up to 12,000 lbs daily. Now they are a prospect for another freezer —and they will buy it from us because they respect our judgement.

This example is perhaps an extreme one, but as an indication of the trend this business is taking we have found that 50% of all the installations in this area which are five or more years old are seriously under-powered. We believe that they were honestly engineered to do what the customer felt his requirements were at the time. They were not, however, engineered to the full potential usage of the cubic content of the room. And in most instances the owner severely blames the original contractor for this lack of capacity.

The accompanying Engineering Table as been devised to provide a simple, quick, and understandable means of avoiding this pitfall and of ensuring the engineering of an installation with adequate capacity to handle any reasonable future developments.

In figuring any cooler loads it is well to remember that such factors as outside design ambient, sun walls, physical dimensions, amount of insulation, and load of lights and motors are relatively permanent and can safely be used on an existing basis in making your calculations. On the other hand, such factors as volume of product load, entering temperature of product, service conditions, and

ENGINEERING TABLE

These calculations are based on 95 F ambient, heavy service, and 16-hour running time.

1 Outside Surface (sq. ft.)	2 Factor for Zero F Freezer (6" cork)	3 Multiplier for Zero F Freezer With 35 F Anteroom	4 Factor for 35 F Room (4" cork)	5 Average Potential Product Load (lbs.)
200-1600	13	.8	13.3	1600-2000
1601-2000	12.5	.85	13	2000-2500
2001-3000	11.8	.86	12.7	2500-3500
3001-4000	11.2	.87	12	3500-5500
4001-5000	10.8	.88	11.5	5500-7000
5001-6000	10.5	.88	11	7000-8600
6001-8000	10.2	.89	10.7	8600-12,000
8001-10,000	9.8	.9	10.3	12,000-16,000
10,001-15,000	9.5	.91	10	16,000-24,000
15,000-20,000	9.1	.92	9.5	24,000-36,000
20,000-Up	8.8	.93	9.2	36,000-Up

temperature desired in the room are all subject to change at any time.

By using a pre-determined formula which makes allowance for these changeable conditions, the contractor can be reasonably sure of engineering an installation which will prove satisfactory for future as well as present operations.

In the Engineering Table, presented here, Column 2 shows factors for a zero F freezer (insulated with 6" of cork) on the basis of the size ranges listed in column 1. Thus, to find the heat leak and heavy service load for any size freezer it is only necessary to multiply the square feet of outside surface by the proper factor selected from Column 2.

Column 3 shows the multiplier to be used on a freezer which is to be equipped with a 35 F anteroom, while Column 4 gives the factor to be used in figuring the heat load of the 35 F room itself (assuming 4" of cork insulation). Here again you simply multiply the square feet of outside surface by the proper factor to obtain the combined heat leak and heavy service load, and in this case the added load imposed by men and lights is included.

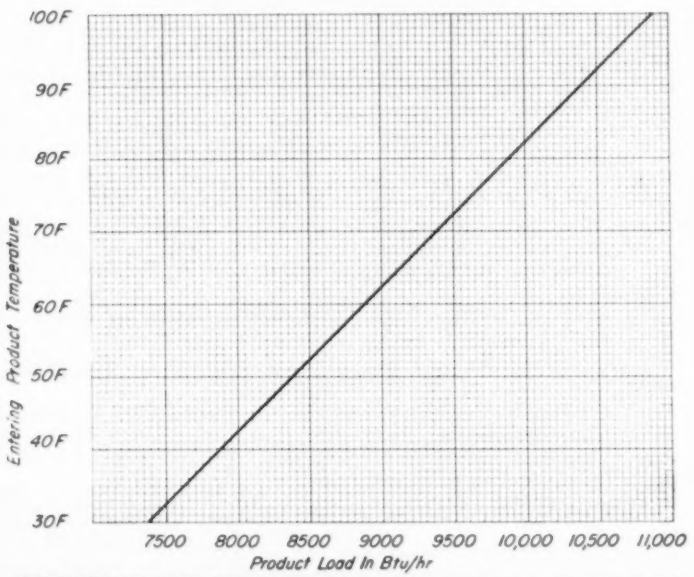
Column 5 of this table is of utmost importance, as it shows the minimum potential product load that, in our opinion, should be used in making any of these calculations in order to minimize the possibility of specifying equipment incapable of handling future as well as present requirements.

The figures shown in this table are accurate within 2%, plus or minus, at conditions given for all freezers and coolers of average rectangular or square shape.

Product loads for freezers, as shown in the Product Load Graph, reproduced with this article, are based on an average of 14 products. These products show an average of .8 Btu/lb specific heat before freezing, 107 Btu/-lb latent heat of fusion, and .4 Btu/lb specific heat after freezing. These calculations are figured on the basis of 16 hours running time.

The simplicity of putting into actual practice the information contained in this carefully worked out graph and table is indicated in the typical Example which is presented on the facing page. This example shows step by step the procedure for using these "short form" materials for working out the heat load of a freezer and cooler to be installed for the operator of a home freezer food plan.

PRODUCT LOAD GRAPH



PRODUCT LOAD CALCULATIONS for freezer rooms are easily completed on this graph which shows load figures for 1000 lbs. of mixed meat and produce frozen to zero F. This curve is based on the following factors: .8 average specific heat of product before freezing, 107 average heat of fusion, .4 average specific heat of product after freezing. To use this graph, simply determine the temperature of the product entering the freezer, then follow that degree line across to the curve, then drop straight down to the bottom to the line showing the Btu/hr/1000 lb of product.

Circle No. 48 on Reader Service Card

What is the Hermetic Eye?

VSF

Plastic EXTRUSIONS

Specialists In Custom Extrusions • Send Prints For Quotation

- DOOR GASKETS
- DUCT SEALS
- WEATHERSTRIP
- FLEXIBLE TUBING
- GLAZING CHANNELS

Jarene "B" Vinyl Plastic is an exclusive Jarrow compound. It is long lasting, weather resistant, compresses easily and is flexible to almost any degree from soft to semi-hard. Offered in a wide choice of colors.

Our plant is geared for small runs as well as large. All new, modern equipment is operated by skilled plastic craftsmen with many years experience.

Over 25 Years Of Service To The Refrigeration Industry.

JARROW PRODUCTS INC.
420 N. LA SALLE ST. CHICAGO 10, ILLINOIS

Circle No. 80 on Reader Service Card

EXAMPLE of a special "short form" method for calculating freezer loads

Here is a typical example of how quickly and simply heat loads of freezers and coolers can be calculated by using the information and methods presented in this section of the Applications Manual.

PROBLEM: How to figure the heat load for a freezer and cooler to be installed for the operator of a home freezer food plan. Here are the elements of this installation:
Zero F freezer (6" cork insulation) measuring 40 x 20 by 10'
35 F anteroom (4" cork insulation) measuring 40 x 20 x 10'
Product — 3000 lbs. mixed product to be cooled from 35 to zero F

STEP 1: Determine outside surface area of freezer in sq. ft.

40 × 20 = 800
40 × 10 = 400
20 × 10 = 200
1400 × 2 = 2800 sq.ft.

STEP 2: Determine heat leak and service load of freezer by selecting from Column 2 of Engineering Table the proper factor of 11.8 for freezer with outside surface of 2800 sq.ft. and multiplying surface area by this factor.

2800 × 11.8 = 33,040 Btu/hr

STEP 3: Determine how much the effect of the anteroom reduces this load by selecting the proper multiplier of .86 from Column 3 of Engineering Table and multiplying heat leak and service load by this factor.

33,040 × .86 = 28,414 Btu/hr

STEP 4: From the Product Load Graph determine that the heat load of 1000 lbs. of mixed product entering at 35 F is 7650 Btu/hr. Obtain heat load for 3000 lbs. of product by multiplying this figure by 3.

7650 × 3 = 22,950 Btu/hr

STEP 5: Add heat leak load and product load to determine total load.

28,414 heat leak and usage load
22,950 product load
51,364 total freezer load

STEP 6: Determine outside surface area of anteroom in sq.ft.

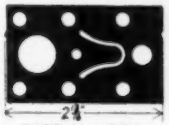
(Calculation same as in STEP 1)

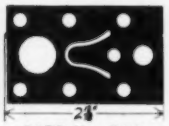
STEP 7: Determine heat load of anteroom by selecting proper factor of 12.7 from Column 4 of Engineering Table and multiplying sq.ft. of outside surface area by this factor.

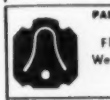
2800 × 12.7 = 35,560 Btu/hr

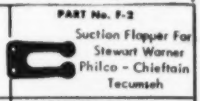
This completes the necessary heat load calculations for the job outlined in the problem. The next step is to select the proper equipment to handle these loads.

ANNOUNCING
New Additions To The
WATSCO HERMETIC FLAPPER FAMILY


PART No. F-23 Suction Flapper


PART No. F-24 Discharge Flapper For Westinghouse

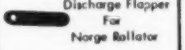

PART No. F-1 Flapper For Westinghouse

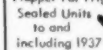

PART No. F-2 Suction Flapper For Stewart Warner Philco - Chieftain Tecumseh

PART No. F-3 Discharge Flapper For Stewart Warner Philco - Chieftain Tecumseh

PART No. F-4 Discharge Flapper For General Electric DR-1 and DR-2

PART No. F-5 Discharge Flapper For Norge Sealed Units


PART No. F-6 Discharge Flapper For Norge Rollator


PART No. F-7 Flapper For Frigidaire Sealed Units to and including 1937

PART No. F-8 Frigidaire Flapper for Sealed Units 1938 and Later

PART No. F-9 Suction Flapper For Crosley

PART No. F-10 Discharge Flapper For Crosley

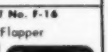
PART No. F-11 Suction Flapper For Westinghouse (Late Models)

PART No. F-12 Discharge Flapper For Westinghouse (Late Models)

PART No. F-13 Discharge Flapper For Sealed Coldspot

PART No. F-14 Flapper Retainer For Frigidaire Units to and including 1937

PART No. F-15 Suction Flapper For Sealed Kelvinator


PART No. F-16 Discharge Flapper For Sealed Kelvinator

PART No. F-17 Suction Flapper For Sealed General Electric

PART No. F-18 Discharge Flapper For Sealed General Electric

PART No. F-19 Flapper For Westinghouse Sealed Unit

PART No. F-20 Flapper Retainer For F-8 Flapper

PART No. F-21 Flapper Valve For Gibson Unit

PART No. F-22 Suction And Discharge Flapper For Tecumseh Units

Ask Your Jobber For Our FREE CATALOG NO. 17, Featuring Our Complete Line
Available at Your Jobber WATSCO
Wagner Tool & Supply Corp.,
REFRIGERATION PARTS AND TOOLS
40-08 22nd ST., L. I. City, N. Y.

Circle No. 81 on Reader Service Card

Advertiser's Index

Acme Industries 64
Airtemp Div., Chrysler Corp. 67
Alco Valve Co. 1
Allen-Bradley Co. 22
Allin Mfg. Co. 58
Harry Alter Co. 63
American Brass Co. 10
Ansul Chemical Co. 8, 59
A-P Controls Corp. ..... Cover 3
Aurora Pump Co. 90

Bell & Gossett Co. 15
Bevco Co. 56
Bonney Forge & Tool Works 79

Century Electric Co. 12
Chicago Metal Hose Div., Flexonics Corp. 49
Coldin Cabinet Co., Inc. 9
Commercial Credit Corp. 27
Connor Engineering Corp. 29
Copeland Refrigeration Corp. ..... Cover 2

Davison Chemical Co. 87
Dow Chemical Co. 39
Drayer-Hanson, Inc. 77
Duro Metal Products Co. 89

Eastern Industries, Inc. 48
Electric Auto-Lite Co. 98
Esmond Mfg. Co. 90

Filtrine Mfg. Co. 51
Flexonics Corp., Chicago Metal Hose Div. 49
Frick Co. 88

General Controls Co. 11
Grand Rapids Brass Co. 81

Halstead & Mitchell 57
Highside Chemicals Co. 19
Holsclaw Bros., Inc. 58

Ideal Cooler Corp. 63
Imperial Brass Mfg. Co. 30

Jackes-Evans Mfg. Co. 20
Jacuzzi Bros., Inc. 46
Jarrow Products 96

Kelvinator Div., Nash-Kelvinator Corp. 83
Kold-Hold, Div. of Tranter Mfg. inc. 7
Kramer Trenton Co. 55

Larkin Coils 23
Lehigh Mfg. Co. 44
Libbey-Owens-Ford Glass Co. 28
Linde Air Products Co., Unit of Union Carbide & Carbon Corp. 25, 92

Maid-O-Mist, Inc. 46
Jas. P. Marsh Corp. 54
McCabe-Powers Auto Body Co. 16
McIntire Co. 91
McQuay, Inc. 2
Miracle Adhesives Corp. 55
Mueller Brass Co. 73

Nash-Kelvinator Corp., Kelvinator Div. 83
Northern Indiana Brass Co. 13

Peerless of America, Inc. 98
Peerless Electric Co. 17
Peerless Pump Div., Food Machinery & Chemical Corp. 6
Penn Controls, Inc. 32
Pyramid Instrument Co. 31

Ranco, Inc. 60
Revere Copper & Brass, Inc. 18
Rotary Seal Co. 21

Schaefer Brush Mfg. Co. 59
Servel, Inc. 85
Cyrus Shank Co. 92
Sporlan Valve Co. 24
Sun Oil Co. 52
Superior Valve & Fittings Co. 56, 63, 96
Sweden Freezer Mfg. Co. 26

Taco Heaters, Inc. 80
Tenney Engineering, Inc. 56, 92
Texas Co. 94

Uniflow Mfg. Co. 46
Union Carbide & Carbon Corp., Linde Air Products Co. 25, 92
United Cork Co.'s 26
United Wire & Supply Co. 82

Virginia Smelting Co. 42
Victory Metal Mfg. Corp. 84

Wagner Electric Corp. 14
Wagner Tool & Supply Co. 97
Westinghouse Electric Corp. 3, 4
A. H. Witt Co. 58

For Eye-Level Readings...

AUTO-LITE

...TEMPERATURE INDICATION

Auto-Lite offers many thermometer styles, permitting plant-wide temperature observation at low cost. Standard temperature ranges from minus 60°F to plus 750°F. Send for latest catalog showing various types.

3-way adjustable mounting

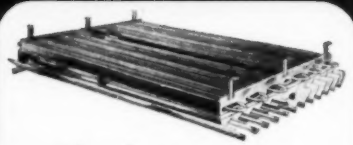
Model F-1 temperature indicator—Rigid stem or capillary tubing for EYE-LEVEL remote reading. Priced from $22.

THE ELECTRIC AUTO-LITE COMPANY
INSTRUMENT AND GAUGE DIVISION
TOLEDO 1, OHIO
NEW YORK • CHICAGO • SARNIA, ONTARIO

TEMPERATURE INDICATORS & RECORDERS

Circle No. 82 on Reader Service Card

Buy Peerless FOR PERFORMANCE



Flash Coolers
Fin Coils
Flash Pans

The Peerless Line of quality products is designed and constructed to meet every demand of modern commercial refrigeration. Our Flash Coolers, Fin Coils and Flash Cooler Pans have proved their superiority in performance under widely varying operating conditions. They are built with an eye to appearance, economy of space, and the utmost convenience in installation and servicing. Louvers fabricated from polished aluminum. Made in a wide variety of standardized sizes and styles—all of unchallenged Peerless quality. Write for Bulletin 49G today.

Peerless of America, Inc.
1501 No. Magnolia, Avenue
Chicago 22, Illinois, U.S.A.

Circle No. 83 on Reader Service Card

Here it is...

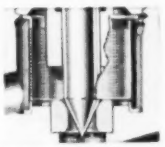
An improved A-P Model 73 Solenoid Valve

with all the features you've asked for!

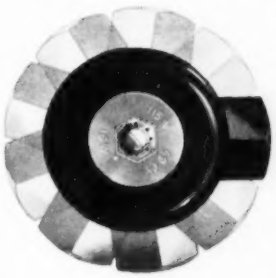
So versatile . . . you can use this solenoid valve for any refrigeration job

Wherever you need a solenoid valve . . . regardless of the type of connection required . . . you'll find that the Model 73 suits your needs exactly. This improved valve is made in four body styles: 3/8" N.PT., 3/8" flare and 3/8" and 1/2" sweat. The coil cover can be rotated a full 360° to accommodate electrical connections from any direction. Can be used for any non-corrosive liquid, and for air and refrigerants. Get all the facts about the dependable A-P Model 73 Solenoid Valve. Write today.

In addition to 3/8" flare connection, above, the model 73 is available with 3/8" N.PT. body, left, and 3/8" and 1/2" sweat connections, right.



Above, non-corrosive, easily removed screen protects needle and seat against damage from grit and dirt, eliminates danger of dirt holding valve open.



Coil cover is held with one nut. Can be rotated in any direction to simplify electrical connections.

6 reasons why the Model 73 is your best buy!

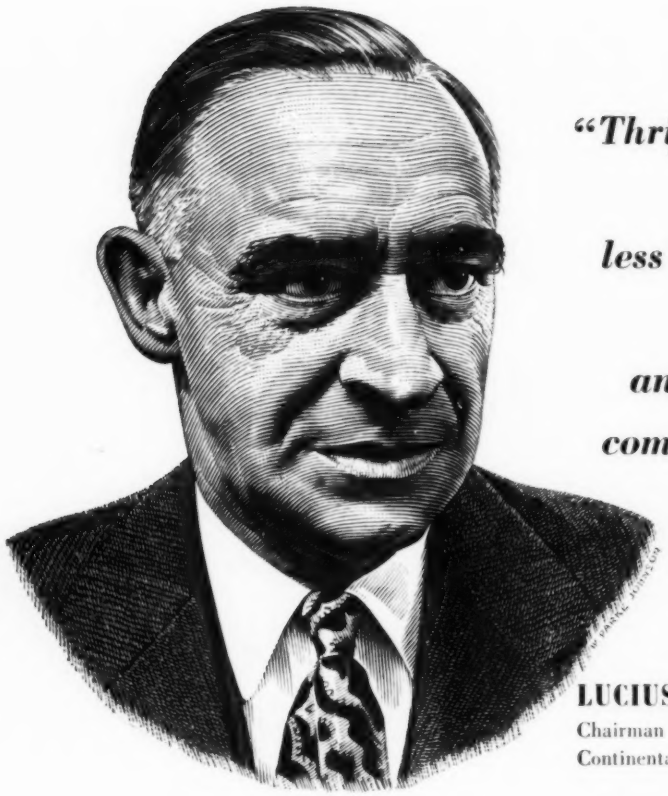
1. Double-dipped, varnish-impregnated coil assures efficient performance under extreme humidity conditions.
2. Valve is equipped with long-life, quiet, floating plunger.
3. Removable, non-corrosive screen protects needle and seat; eliminates danger of dirt preventing proper valve closing.
4. Coil is easily changed to suit voltages required for any special application.
5. Plate with complete electrical data accompanies each interchangeable coil.
6. Available with three orifice sizes — 5/32", 3/16", 7/32".

A-P CONTROLS CORPORATION

2486 North 32nd Street, Milwaukee 45, Wisconsin
In Canada: A-P Controls Corp., Ltd., Cooksville, Ont.
For Export: 13 E. 40th Street, New York 16, New York, U.S.A.

Gaspack for Space Heating
"Comfort-Snap" Temperature Control
Thermostatic Temperature Control
. . . for Air . . . Liquids . . . Gases . . . Refrigerants
DEPENDABLE Controls
Electric Top Temperature Control
Gaspack for Water Heaters
Thermo-Electric Valves

Circle No. 84 on Reader Service Card



"Thrifty citizens . . . with Savings Bonds . . . less likely to be taken in by the false promises and ideologies of communist propagandists . . ."

LUCIUS D. CLAY
Chairman of the Board
Continental Can Company

"The regular purchase of Savings Bonds through the Payroll Savings Plan by millions of our citizens contributes importantly to the country's economic stability, the national defense effort, and to the financial independence of the individual. The thrifty, self-reliant citizen is one far less likely to be taken in by the false promises and ideologies which communist propagandists invariably direct to the 'have nots'."

• To thousands of company executives, accountants, payroll department employees, PSP means Payroll Savings Plan, the simple payroll allotment operation through which employees make a monthly investment in U. S. Savings Bonds.

• To almost eight million employees of nearly 50,000 companies, PSP has a more intimate connotation. To them, PSP spells *Personal Security Plan.*

• Multiply the personal security of a single Payroll Saver by 43,000,000—the number of individuals who hold Savings Bonds having a cash value of $49.5 billion—and you have economic stability that is the keystone of our national defense.

• Thanks to the thousands of companies which offer their employees the Payroll Savings Plan, Bill Brown in the Machine Shop . . . Joe Green in the boiler room . . . and eight million more Browns and Greens can well turn a deaf ear to ". . . the false promises and ideologies . . ." of communist propagandists. Bill can see his new home taking shape in his growing stack of Savings Bonds . . . Joe sees each bond another step toward a college education for little Joe . . . and the "Old Timer," who eats his lunch with Bill, talks of "sitting down pretty soon" because his Bonds will make a nice addition to his Social Security.

• PSP holds still another benefit—this one for the employer. Payroll Savers are conscientious workers. Statistics show that absenteeism goes down, production improves and accidents decrease as payroll participation goes up.

• If employee participation in *your* Payroll Savings Plan is less than 50%—or if your company does not have a Payroll Savings Plan—get in touch with Savings Bond Division, U. S. Treasury Department, Washington Building, Washington, D. C. Learn how easy it is to help your country, your employees and your *company*—through the PSP.

The United States Government does not pay for this advertisement. It is donated by this publication in cooperation with the Advertising Council and the Magazine Publishers of America.

COMMERCIAL REFRIGERATION and AIR CONDITIONING